The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XXXVII. November 27, 1937 No. 961

Chemists' Progress

THE young chemist who has just entered, or is about to enter, industrial life is always grateful for advice given by men who have had long experience in the profession. By this means he can learn something of what is expected of him and can obtain an insight of industrial conditions. He often feels astonished that, having completed a three- or four-years' course in chemistry and subsequently graduated, his qualifications are considered to be woefully lacking in certain respects by prospective employers. To take a case in point, leading American industrialists have recently been asked by the editor of a well-known American contemporary journal to express their views on the ability of the modern young chemist. The replies published are a source for a certain amount of uneasiness. The newly graduated are expected to be the possessors of an encyclopædic knowledge of chemistry as a firm background for future specialisation; they must have a good working knowledge of at least two foreign languages, they must be able to write their mother tongue with unexceptional clarity and fluency; they must be practical and versed in chemical technique; and in addition, they should preferably acquire a knowledge of book-keeping, accountancy and kindred subjects.

The young chemists of America, judged by industrialists, appear to fall far short of the latter's requirements. One is tempted to deduce from criticism of this nature which is presented in the form of "advice," that the critic himself feels that he, in common with other graduates of his day, is the proud possessor of all those necessary qualifications which he finds so markedly lacking in the rising generation of chemists to-day, and is accordingly giving himself a congratulatory pat on the back. It can be said that the recently graduated chemist profits nothing from such destructive criticism and is liable instead to acquire a feeling of resentment that having undergone a lengthy period of training, that training should be held to be so inadequate by the industrialist. Thus he does not want, and it does him no good, to hear such "advice," but what he does want to hear, and is very grateful for hearing, is general advice on how to conduct himself in industry, the advisor working on the gratifying and relieving assumption that the young graduate is a chemist in fact and in qualification.

The annual Gluckstein memorial lectures, established by the Institute of Chemistry to commemorate the late S. M. Gluckstein, are on the same lines as that given by Gluckstein himself in 1927 under the title "Chemists and Dividends," and not only take the form of a tribute to Gluckstein's memory, but the lecturer also from his wide experience defines what he feels to be the correct standard of conduct for the individual chemist in industry and what attitude the young chemist should adopt in commercial and technical relationships within the industry in order that he may enjoy a long and prosperous professional career. That this is the kind of information that young chemists always appreciate is shown by their attendance in large numbers at these annual lectures. The ninth Gluckstein memorial lecture delivered by Mr. W. A. S. Calder on November 17 certainly proved to be no exception to the general rule.

The lecture excellently upheld the traditions established by previous Gluckstein lecturers, as well as being a very fine tribute to Gluckstein himself, and it was full of good advice dispensed in a most witty and humorous manner. Mr. Calder said that the question had often been asked: "Why be a chemist?" Numerous reasons had been put forward at various times, but the only reason is the existence of a positive urge to join the chemical profession. In the lecturer's view, this urge was essential for anyone taking up chemistry and he suggested that everyone who thinks of becoming a chemist ultimately should, on leaving school, take a post with a commercial firm for a year before undertaking a chemical course, in order to test that that urge remains and is not merely transient.

Having graduated, the subsequent success of the young chemist is due to, first, character, and second, discipline. Character entails the ability to deal with one's fellow men and discipline might be defined as realising the rights of superiors, colleagues and subordinates. The duties of a chemist may be divided into three main classes: first, care for the safety of those in his charge; second, maintenance of the purity of the product; and third, reduction in the cost of production. A positive hatred of accidents should be cultivated, but when an accident does happen, the unfortunate victim should not be looked upon as "having brought it on himself," but rather as a casualty in the army of industry.

This attitude towards accidents as presented by Mr. Calder must appeal to everyone's commonsense, and if all those entering industry for the first time looked upon the matter in the same light, the number of accidents would surely be diminished and a great deal of unpleasantness avoided in apportioning the blame for accidents which do occur. He considered that loyalty was a most desirable asset; loyalty to the employing company and its members. Loyalty implied a deep appreciation of the meaning of team-work and being careful always to avoid wounding the susceptibilities of others. Absense of loyalty and team-work in a company can seriously injure its position, for no one will go out of his way to do business with a concern which is not "efficient" in the widest meaning of the term. Efficiency cannot be acquired without team-work.

Notes and Comments

The Anglo-United States Trade Agreement

IT is excellent news that the first formal step has been taken towards a trade agreement between Great Britain and the United States. British exporters will be busy in the next few weeks making suggestions for detailed concessions under the American tariff. If and when a trade treaty is signed, it cannot fail to be a stimulus to manufacturing industry in this country. That, however, will not be the whole story. Equally important will be the psychological effect of an agreement between the two chief trading nations of the world to cease holding each other at arms' length and to begin making the widest possible use of each other's products. It may well be a turning point in post-war economic history. For years the record has been a melancholy one of more and more tariffs, quotas, subsidies, and trade-strangling machinery generally. There is at last a well grounded hope of this process being reversed, to the assured advantage not only of Great Britain and the United States, but of the rest of the world.

Lighting in Chemical Works

IMPORTANT factors in industrial lighting are the position of the light sources, their nature, strength, adjustability, ease of maintenance and, in the case of chemical works, the materials from which the light fittings are made. Useful information on the choice of light fittings resistant to corrosive atmospheres was given by W. R. Stevens and S. Anderson to a meeting of the Illuminating Engineering Society last week. All specular reflectors for use in corrosive atmosphere must be protected as far as possible by means of a totally enclosed housing and for this reason, silvered glass with a suitable protective backing is most satisfactory. Anodically oxidised and polished aluminium can be used as a specular reflector where the corrosive attack is not great; rhodium plating is very resistant but somewhat expensive. Chromium plating on nickel and stainless steel has the advantage that all signs of normal deterioration can be washed away with soap and water. Apart from porcelain, the most common metals used for reflector housings are iron, steel, copper, brass, lead-coated steel, and aluminium. Iron and ordinary carbon steel must be protected by painting, galvanising, or some such method, but in general stainless steel was likely to give good service. Copper and brass do not corrode as rapidly as would be judged from their rate of discolouration. Lead-coated steel resists most types of corrosive attack and is very suitable where sulphuric acid fumes are present. Aluminium and its alloys would corrode in bad industrial atmospheres; anodic oxidation increases their resistance.

National Self-Sufficiency

RELUCTANCE to be dependent on any foreign country for supplies of essential raw materials of manufacture, or of the manufactured goods themselves, is a characteristic feature of present day international commerce. The imposition of sanctions against Italy two years ago is probably largely responsible for this condition. It was forcibly brought home at that time how severely a country could be materially damaged by isolating it completely from supplies of imported commodities. Italy was compelled to meet the situation by producing herself as many of the materials as possible, and where home production was totally unfeasible, by manufacturing some form of substitute. Now, Italy points with pride at her economic independence and celebrates, not mourns, the anniversary of the enforcement of sanctions. Italian national output of many important minerals had been doubled in the last few years. The production of cellulose had been raised from 82,000 to 350,000 quintals. It was claimed that she was supplying her own requirements of raw material for the chemical industry. In 1934, she used 91 per cent. of natural cotton in her spinning mills and this was now reduced to 68 per cent. by the use of substitutes. In the textile industry as a whole, 48 per cent. of substitutes were now employed. Other countries, particularly those financially depressed, have not been slow to follow Italy's lead, and the increasing production of substitutes in the future can only be expected. The situation is rendered less alarming to the vendor of the natural product on reflecting that the so-called substitutes are in effect completely new materials with correspondingly new properties. The use of silk has not been prevented by artificial silk, nor that of natural resins by synthetic resins. It is unlikely that natural wool will be replaced by casein wool.

Above and Below Ground

PIPEWORK which is installed to convey liquids or gases between two points in the works can be erected overhead *or* placed underground. Each method has its advantages and disadvantages, and in a large works where railway lines or roads may pass between the individual plant buildings, storage sites, etc., each of these methods should be considered when a large extent of new pipework is to be installed. Pipes which are erected overhead allow easy inspection for possible leakage; if leakage occurs, the necessary repairs can be readily carried out, and when necessary branch pipes may be connected at the minimum of trouble. The disadvantages of overhead piping, however, are not so readily brought to mind until they are mentioned. There is possible danger from freezing and variations in temperature, if the pipework is not properly protected against the weather; there is also danger when any unforeseen contingency causes serious leakage or if the pipe bursts; and there is risk of mechanical injury which may give rise to leakage or bursting.

The Pros and Cons of Underground Pipes

PIPES which are buried underground do not occupy valuable space or cause hindrance to the movement of vehicles about the works. The cost of installing underground pipes is relatively low, and there is adequate protection against mechanical injury (if buried deep enough) and against freezing. Underground pipes, however, are not easy to repair, and they make the detection of leakage a difficult matter. Any deterioration by corrosion may proceed unnoticed for some time; corrosion troubles may be considerably increased from the exterior by conditions peculiar to the ground in which the pipes are buried, and, in exceptional circumstances, by the accumulation of chemicals which have leaked from the pipe in question or adjacent pipes or which have collected from the surface of the ground. Danger from bursting pipes, although mentioned specifically in respect of overhead pipes, can be equally serious where an underground pipe of easily burstable nature—for instance, lead—is conveying a liquid under pressure. If stoneware pipe is placed beneath the ground means should be taken to protect is as far as possible against damage by sudden shock or vibration due to the passage of heavy vehicles, armoured sections being adopted if considered necessary.

Dehydrations in the Vapour Phase*

A Study of the Effect of the Surface of a Catalyst

By
KENNETH KARL KEARBY

THE production of a porous structure and a large surface area has usually been one of the prime considerations in the development of a vapour phase catalyst. The discovery of aerogels[1] permits the preparation of some of the common oxide catalysts in an expanded form without the use of any catalyst support. The apparent densities of these pure oxide gels can be varied over a ten fold range. An interesting problem is presented in determining the effect of increasing porosity on the adsorptive and catalytic properties of the gels.

An Ideal Structure for Catalysis

The first study of aerogels as catalysts was made by Kistler, Swann, and Appel[2], who pointed out that the aerogel possesses an ideal structure for catalysis. They showed that thoria aerogel was a much better catalyst for the conversion of aliphatic acids and esters into ketones than any catalyst known. It would give the same conversions as thoria ex oxalate at temperatures 50° C. lower than the latter. High molecular weight ketones such as laurone could be prepared readily with thoria aerogel, where previously only low yields had been obtained. These results with the first aerogel catalysts naturally led to the suggestion that perhaps all catalysts would show an increased activity in the aerogel form. It was with a view of answering this question and of studying the effect of porosity on the adsorptive and catalytic properties of a material that this research was initiated.

Inasmuch as a complete investigation of all catalysts is a very extended problem, it was decided that this investigation should be confined to dehydration reactions for which the catalysts could be prepared as good aerogels. The reactions selected were the dehydration of ethyl and *n*-amyl alcohol over alumina gels, the dehydration of ethanol and the amination of *n*-butyl alcohol over chromic oxide-alumina gels, and the esterification of ethanol with acetic acid over silica gels. A gel and an aerogel of each of these oxides were prepared from the same batch of original gel. A silica gel of a porosity between that the aerogel and the exerogel was also prepared. Alumina and silica precipitates were prepared for purposes of comparison with the gels.

Adsorption Measurements

The adsorption of water vapour by all of these catalysts was measured at 25° C. at varying relative humidities up to 80 per cent. A static method was used to determine these isotherms. It consisted of allowing the samples to stand over different concentrations of sulphuric acid in an evacuated desiccator, and determining the water adsorbed by the increase in weight of the samples. The results showed that the alumina gels were better adsorbents than the silica gels at low humidities, but were inferior at high humidities. The inclusion of 9.36 per cent. chromic oxide in alumina aerogel increased its adsorptive capacity as much as 50 per cent. Decreasing the porosity of the gels showed no consistent effect on the adsorptive power of the various gels. The large adsorptive capacity of these gels showed that they were all of excellent quality. The large capacity for water showed that the adsorption is not entirely a surface phenomenon and the isotherms give no indication of the relative surface areas of the catalysts.

The procedure followed was similar for all reactions. For all of these the catalyst was contained in the annular space between 28 mm. and 45 mm. thin-walled pyrex tubing; the 50 c.c. of catalyst filled this space to a depth of about three inches. The temperatures listed for the various reactions are the temperatures at which the reactants entered the catalyst. Different temperatures were used for the different reactions, but for each reaction the temperature was maintained constant and rate studies made.

Alumina Catalysts

The dehydration of ethyl and *n*-amyl alcohols at 350° C. was studied over alumina aerogel, xerogel, and precipitate. The conversion of both alcohols to olefins showed that the xerogel was 1.8 times as active as the aerogel; *i.e.*, the same conversion was obtained with the xerogel rate 1.8 times that of the aerogel. The precipitate was considerably more active than either gel. The conversions to ethylene for the aerogel, xerogel, and precipitate varied from 19 per cent., 27 per cent., and 35 per cent. respectively, at a space velocity of 4090, to 66 per cent., 79 per cent., and 100 per cent., at a space velocity of 409 [c.c. of vapour (N.T.P.) per c.c. of catalyst per hour]. The conversions to amylene varied from 41 per cent., 54 per cent., and 72 per cent. respectively, at a space velocity of 3050 to 80 per cent., 87 per cent., and 91 per cent. at a space velocity of 610. The result with both gels showed that amyl alcohol is 3.5 times more easily dehydrated than ethanol. The extent of dehydrogenation was less than 1 per cent. in all the work with pure alumina catalysts.

Mixed Gel Catalysts

The dehydration of ethanol at 350° C. and the amination of *n*-butanol at 375° C. were studied over an aerogel and xerogel having the composition 9.36 per cent. chromic oxide-90.6 per cent. alumina. The ethylene conversion showed that the aerogel was 2.0 times as active as the xerogel. The conversions varied from 16 per cent. and 10 per cent. for the aerogel and xerogel respectively at a space velocity of 5840 to 45 per cent. and 36 per cent. at a space velocity of 292. On the other hand the xerogel was a more active dehydrogenation catalyst, giving, at a space velocity of 117, a conversion of 7.8 per cent. acetaldehyde compared to 2.5 per cent. for the aerogel. The ether conversion remained constant at 50 per cent. for both gels, between space velocities of 5840 and 1170 and then decreased with increasing time of contact in exact proportion to the amount of ethylene formed. For the dehydration of ethanol the pure alumina aerogel was 2.6 times as active as the mixed aerogel; the pure alumina xerogel was 7.1 times as active as the mixed xerogel.

The results on amination of *n*-butanol showed that the aerogel was only slightly more active than the xerogel as a catalyst for this reaction. The total amine conversions for the xerogel and aerogel respectively, varied from 31 per cent. and 31 per cent. at a space velocity of 2560, to 36.5 per cent. and 41.5 per cent. at a space velocity of 1001. For the same space velocities the conversions to mono-butyl-amine varied from 18.5 per cent. over the xerogel and 21 per cent. over the aerogel to 25.5 per cent. and 28.5 per cent. A conversion to 29.5 per cent. mono butyl amine and 39 per cent. total amines over the aerogel was the best result obtained.

Esterification

The vapour phase esterifications over silica catalysts showed that the aerogel was 2.1 times as active as the partly shrunken aerogel and 9.9 times as active as the xerogel. The precipitate was initially more active than any of the gels, but it lost activity very rapidly. The conversions at a space velocity of 1535 for the xerogel, partly dried aerogel, aerogel, and pre-

* Abstract of a thesis submitted for the degree of Ph.D. in chemistry, Graduate School, University of Illinois, 1937.

cipitate were 5 per cent., 16 per cent., 27.5 per cent., and 47.5 per cent. respectively. At a space velocity of 256 they were 20 per cent., 49 per cent., 58.5 per cent., and 49 per cent.

The results of this research make it possible to evaluate the true merits of aerogels as catalysts for dehydrations. The evidence does not all point in the same direction and conclusions must be made by averaging the results. It has been shown that thoria aerogel is a better catalyst than thoria xerogel for converting acids into ketones[2]. These gels are also more active than precipitated thoria.

Alumina aerogel is less active than alumina xerogel in converting alcohols into olefins, and both are less active than some precipitated forms of alumina. An aerogel having the composition 9.36 per cent. chromic oxide and 90.6 per cent. alumina is only slightly more active than the corresponding xerogel in converting butyl alcohol and ammonia into butyl amines. Silica aerogel is more active than silica xerogel, but less active than some forms of silica for vapour phase esterification. This aerogel is more active than the xerogel as a catalyst for the vapour phase oxidation of acetaldehyde[3]. For this reaction silica aerogel and platinised silica aerogel are the best vapour phase catalysts known. It can be concluded that in general the aerogel is a better catalyst than the xerogel, but that the differences may not be great and exceptions exist. In about half the reactions studied the aerogel is the most active catayst known.

Porosity and Surface Area of Catalyst

The fact that the aerogel is not always the most active catalyst indicates that the porosity and surface area of a catalyst are not of prime importance in determining its activity. The much greater activity of some of the precipitates shows that other factors such as the composition and the method of preparation of the catayst are more decisive in determining its activity. The gels also show this effect. Only in the case of the inactive silica gels is there any apparent correlation between porosity and activity. These results indicate that the optimum porosity of a catalyst is beyond the range of the aerogel, but the evidence is too meager for generalisation. The results fail to show any relationship between adsorption capacity for water and catalytic activity in dehydration reactions.

The work on the preparation of butyl amines has led to a better knowledge of the properties of a good catalyst for this reaction. It is shown that neither dehydration nor dehydrogenation activity is of prime importance for a good amination catalyst. The results indicate that two component catalysts are superior to single component catalysts for this reaction. The data also show that decreasing the malor ratio of ammonia to alcohol from 4.5 to 2.4 decreased the ratio of (the percentage conversion to mono butyl amine) to (the total percentage conversion to amines) from 0.73 to 0.64. The difference is represented almost entirely by di butyl amine. The work on these catalysts indicates that the xerogel should be a good catalyst for the production of ether, since a higher ratio of ether to ethylene has been obtained with it than with any of the other catalysts. These two gels show that the differences in their preparation cause a change in specific activity as well as total activity, *i.e.*, the xerogel is a more active dehydrogenation catalyst and a less active dehydration catalyst.

Mechanism of Ethanol Dehydration

The data on the dehydration of ethanol over the mixed catalysts show that between space velocities of 117 and 878 every increase in conversion to ethylene is accompanied by an equal decrease in the conversion, to ether, while about 30 per cent. of alcohol remains unchanged. The ethylene formed in this range is about 50 per cent. of the total theoretical conversion. Similar experimental results have been obtained by Pease and Yung[4], and by Alvarado[5]. In this range if any alcohol were being converted into ethylene directly, it would have to be replaced by alcohol being formed from the ether. The fact that the ether concentration falls belows its equilibrium concentration indicates that this is not occurring, and therefore no alcohol is being converted directly into ethylene in this range. It seems improbable that the direct conversion of alcohol into ethylene should take place at higher or lower space velocities and not in this intermediate range. While not conclusive the data indicate that all of the ethylene formed passes through the intermediate ether stage.

Summarising the results of this investigation, the author states that a good catalyst has been developed for the conversion of alcohols and amonia into amines, and that support has been given to the hypothesis that ether is an intermediate product in ethylene formation from alcohol.

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Sorbitol and Mannitol

An Electrolytic Method of Production

THE production of sorbitol by the electrolytic reduction of glucose is descirbed by Taylor (*Chem. Met. Eng.*, 1937, *44*, 588-591). Glucose in the form of sugar is dissolved in water containing sodium hydroxide and sulphate, and the solution is circulated through the cathode compartment of a rectangular cell (13ft. long, 6 ft. broad, and 3 ft. deep) containing 35 cathodes of lead-mercury amalgam, and 36 lead anodes, the anolyte being dilute sulphuric acid which is separated from the catholyte by an unglazed porcelain diaphragm. The corn sugar is cathodically reduced to sorbitol and mannitol under a p.d. of 20 volts, and at a current of 5,000 amps.; the lead anodes are oxidised to lead dioxide.

The reduced catholyte is evaporated nearly to dryness, and the organic matter is dissolved out with alcohol, leaving the sodium sulphate behind. The mannitol is recovered from the alcoholic solution by crystallisation, and is further purified by recrystallisation from water. The sorbitol is recovered by evaporation of the alcoholic solution, the alcohol being reused. The sorbitol is obtained in the form of a thick syrup, containing 45 per cent. of water, in which form it is sold.

There is a considerable market for sorbitol as a conditioning agent in textiles, due to the fact that it absorbs very much the same amount of water per unit weight in atmospheres of very different relative humidities.

Annual Chemical Dinner

THE annual chemical dinner was held in the Wharncliffe Rooms, Great Central Hotel, Marylebone, N.W.1, on November 18. Sir Robert H. Pickard presided over a gathering of between 250 and 300, which comprised members of the different branches of the chemical industry and their friends. The dinner was held under the auspices of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, the Society of Dyers and Colourists, the Society of Public Analysts, the Faraday Society, the Biochemical Society, the Institution of Chemical Engineers, the Institution of Petroleum Technologists, the Oil and Colour Chemists' Association, the British Association of Chemists, the Association of British Chemical Manufacturers, and the Chemical Club. The success of the evening was again largely due to the efficient organisation of Mr. F. A. Greene. After the loyal toasts had been proposed by Sir Robert Pickard, the company adjourned for dancing until midnight. Among those present were:—Dr. and Mrs. J. L. Baker, Mr. W. A. S. Calder, Dr. and Mrs. W. Cullen, Dr. and Mrs. L. H. Lampitt, Dr. and Mrs. R. Lessing, Dr. and Mrs. H. Levinstein, Sir Gilbert and Lady Morgan, Mr. and Mrs. J. Davidson Pratt, and Mr. J. F. Ronca.

Industrial Uses of the Metallic Resinates

By EDWARD STUBBS

THE resinates, which are compounds of rosin with metals, have many industrial uses. They retain certain general features which are peculiar to rosin—a weak acid—but individually they acquire new properties which vary with the metal which is introduced in combination with the rosin. Their main use is in the rôle of a siccative or "drier" to accelerate the drying of the oils used in paint and varnish. Here their value not only depends upon the power to increase the rate at which the paint dries, but also upon their ability to allow cheap semi-drying oils to be used as substitutes for linseed oil.

Hardened Varnish Films

Used as a drier, manganese resinate is about twice as powerful as lead resinate. A product containing both manganese and lead is almost as powerful as manganese resinate used alone, but it has a special advantage in being less likely to cause the oils to darken, a trouble normally experienced when manganese resinate is used alone. Cobalt resinate is superior to the lead and manganese compound; it is made from specially selected rosin in order to ensure purity of colour, and is chiefly used in preparing terebines of very pale quality. Bismuth resinate has been claimed to induce a pronounced hardening effect upon varnish films. When dissolved in turpentine, white spirit or similar solvents, the resinates of zinc and aluminium give clear solutions which dry to vitreous varnish coatings with a particularly hard surface. The dry films have been found to offer very good resistance to moisture and in general to varying atmospheric conditions; these films do not lose their lustre and they are quite equal to the films which are obtained from oil varnishes of good quality, but are much cheaper. The amount of turpentine which is required to make a varnish of suitable consistency for general use varies with the nature of the resinate employed; from 3 to 5 lb. of zinc resinate, or 1½ to 2 lb. of aluminium resinate, is generally used per gallon of turpentine.

Resinate varnishes with which pigments have been incorporated have the distinctive feature of giving a lustrous effect associated with the particular colour of the pigment. For instance, zinc resinate in turpentine gives a white finish, but when the zinc resinate is replaced by cadmium resinate pearly effects are obtained; zinc oxide is incorporated in such a varnish to give additional covering capacity, which is usually desirable.

Ceramic Lustres

Bismuth resinate, which is colourless, is used as a flux for fixing colours applied to porcelain and sometimes to reduce the intensity of these colours. It is a useful material for shading the "iron lustres," that is, it is capable of giving a range of tints which vary from light reddish yellow to deep orange. In the case of cheap faience, bismuth resinate can be replaced by lead resinate with similar but weaker effects. Aluminium resinate, when dissolved in turpentine and applied to porcelain, has an important use in making the brilliancy of other colours much more pronounced. It will also impart iridiscent effects to these colours if the porcelain is subsequently fired in an oxidising atmosphere. Silver resinate gives a brilliant yellow lustre to white porcelain; when applied to a blue porcelain body it produces a green lustre on being re-fired. Fine yellow tones are obtained from uranium; pearly effects are produced by cadmium.

Resinate lakes, made by precipitating metallic resinates in the presence of basic dyestuffs such as magenta, rhodamine, safranine, brilliant green, methylene blue or methyl violet, usually contain from 5 to 15 per cent. of colouring matter. They dissolve in a range of solvents and can be used to tint waxes and wax products. Solutions of these lakes give good varnishes, the elasticity and permanence of which can be increased by the addition of a small percentage of rubber. Magnesium resinate is often employed in the manufacture of sealing wax; it decreases the solubility of the wax in methylated spirit and in alcohol, and also increases the degree of adherence between wax and paper. Cadmium resinate enters into the composition of amber substitutes; it increases the hardness of these products without inducing brittleness.

Copper resinate and zinc resinate are co-constituents of anti-fouling compositions applied to the bottom of ships to prevent the adherence of barnacles and marine weeds when in tropical waters. Calcium resinate and zinc resinate have been found to be equally effective for use in temperate waters, especially when arsenic is present to the extent of 6 per cent. The resinates of zinc and aluminium in the form of varnishes are efficient electrical insulating compositions with relatively high breakdown voltages; they can be used to impregnate windings, paper and tape, and also for finishing purposes.

Treatment of Textiles

The addition of zinc resinate to cellulose before solution has been found to increase the tensile strength of artificial silk threads. Zinc resinate assists in making a viscous silk which is impermeable to water and thus allows such silks to be washed in the presence of soap and soda. In the bleaching and dressing of textiles, rosin soap (sodium resinate) is used in the caustic soda bleaching process as a means for preventing the cloth from becoming very soft and greasy when it passes through the finishing process. Textile goods which are intended for printing can favourably retain a trace of resinate, which has the effect of keeping the whites much clearer during the ultimate steaming process, especially when alizarine colours are used. Sodium resinate is also used in the sizing of paper, in the manufacture of soaps, printing inks, and leather polishes, and as a lubricant in cases where it is not possible or is inadvisable to use an oily medium.

Storage of Petrol

Occupier of Trade Premises Fined

AT the Thames Police Court on November 19, when Nathan Cohen and Sons, Ltd., fur skin dyers and dressers, of Aberfeldy Street, Poplar, were summoned for keeping a quantity of petrol at their premises on October 12, without a licence, contrary to the Petroleum (Consolidation) Act, 1928, and the contention was put forward that the Act was an obscure one, and a plea of guilty was entered.

Mr. J. Cann, for the London County Council, said that no person was allowed to keep more than three gallons of petroleum on their premises without a licence from the Council, and an inspector who visited the defendants' premises on October 12 found there a total of 10 gallons and one pint. The manager said he was unaware that a licence was required, and immediately removed the petrol. There were 60 persons working on the premises, and the licence would not have been granted had an application been made.

Mr. Banks, appearing for the defendant company, said they had to use petroleum in the course of their business. The Act was quite an obscure one, and the British Fur Traders' Association, of which the firm was a member, were not aware that the Act was in force, or that it applied to the defendants. If the defendants had had any idea a licence was necessary, they would have applied for one.

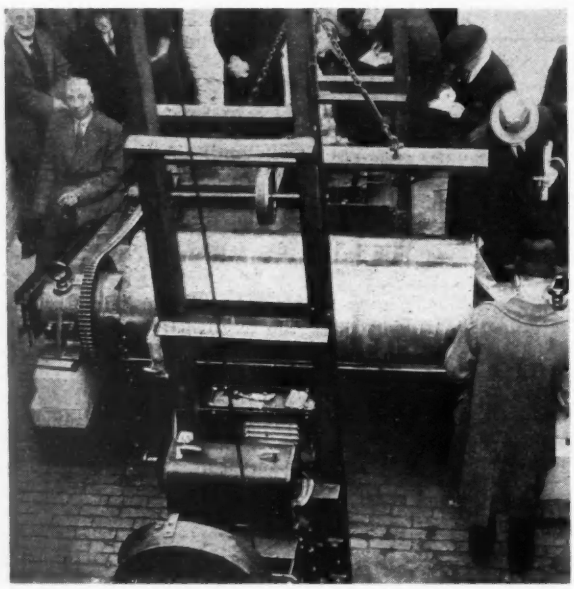
Mr. Cann said the penalty for the offence was £20 plus £5 per day.

Mr. Everard Dickson: These matters are serious. It is essential that the law should not be obscure in these matters, but that it should be observed. There must be a fine of £5.

Electromagnetic Separators

The World's Largest Magnetic Drum

THE protection of continuously running plant, such as crushers, grinders, etc., which are liable to damage should "tramp" iron enter with the feed, requires the use of self-cleaning types of magnetic separators, the two types most commonly used being the magnetic pulley and the magnetic drum. Based on efficiency, the magnetic drum is to be preferred to the pulley, the feed coming into direct contact with the drum being more thoroughly searched than if a belt is interposed as in the case of a magnetic pulley. There is a further advantage of reduced weight and less power.



World's largest magnetic drum on view at Birmingham.

The Rapid Magnetting Machine Co., Ltd., have manufactured a magnetic drum which is said to be the largest in the world. It is being installed to protect a shredder handling large quantities of bagasse or sugar cane against occasional "tramp" iron entering the feed. The material is brought forward to the shredder by means of a slat conveyor 6 ft. wide, the maximum depth of material being 10 in. As in the case of all the drums manufactured by this firm, the discharge of the extracted "tramp" iron is automatic and the entire equipment has been built for continuous operation.

The dimensions of the drum are 36 in. diameter by 72 in. wide on the working face; the centres of the bearings are 8 ft. 10 in., and the overall length of the drum is nearly 11 ft. Its weight is 7¼ tons, the switchboard and motor generator set being separate items. The maximum power consumption of the separator when in operation is 4¼ kilowatts.

In magnetic drums it is essential that the clearance between the rotating cover of the magnet poles inside should be cut down to ensure the minimum reluctance for the magnetic path. This produces difficulties inasmuch as the permissible bending the magnet unit inside the shell has to be reduced to the absolute minimum. In this equipment the tolerance allowed for bending the shaft was half a degree per 12 inch length. The major problem in the design of this drum was to produce a magnet system having a sufficiently high bending moment to prevent any possibility of a sag in the centre being sufficient to cause the magnet poles to foul the cover. The strength of the cover itself is so great that no allowance has been made for bending. A unique method of constructing the magnet system has been employed.

The drum was shown at Birmingham last week and, at the luncheon preceding the view, the visitors were received by Mr. H. H. Thompson, chairman of the company, and Mr. A. E. Davies, director. Mr. M. Dudley Thompson, sales representative, and Mr. H. E. Huttor, technical designer, were among other officials of the company present.

Special Synthetic Resin

Application in Wood Impregnation

THE application of a special synthetic resin material for impregnating wood, which has been developed by Halila, of Slough, is described in *Plastics* (1937, *1*, 166-168). The resin is valuable both for bonding veneers, in which it is said to be superior to casein glues, and also for strengthening them, this property being its most important feature. Thus, impregnated veneers can be bent to a very acute angle, it is claimed, without showing the least sign of cracking. This effect was first utilised in the construction of light boats, such as canoes, etc., but a much wider field has been found in the manufacture of barrels of true barrel shape, from single sheets of laminated veneers instead of staves. These barrels can be mass-produced, and are less than half as heavy as the stave type, and are water-tight without being steamed, and much more acid- and weather-resisting. The fact that the moisture absorption of the impregnated wood is only 2 per cent. after 24 hours immersion is another advantage. Another important field of application is for aircraft construction, especially in the manufacture of airscrews. These have to be made of graded density from centre to tip, which is achieved by varying the extent of impregnation, the maximum weight percentage of resin being 45 per cent. Owing to the higher strength of the treated wood, the volume of a screw made from it can be considerably smaller than one fabricated from pine.

Zinc Sulphide Pigment

Production Direct from Zinc Blende

ZINC sulphide in zinc sulphide ores, ore concentrates, and similar material is usually in the crystalline form and mixed with considerable quantities of gangue and other foreign substances. In a finely pulverised form, as in flotation concentrates, the size of the zinc sulphide particles is also considerably greater than the permissible size in zinc sulphide pigments. Moreover, the zinc sulphide crystals contain substances, either in solid solution or in chemical combination, which cannot be separated.

According to a new process (German Patent 648557), to which reference is made in *Technische Blätter*, 1937, No. 41, p. 622, finely pulverised zinc blende is decomposed by heating with sulphuric acid to produce zinc sulphate and hydrogen sulphide; the zinc sulphate is dissolved in water and through conducting into this solution the hydrogen sulphide obtained in the decomposition stage, zinc sulphide is deposited out of the solution. The acid used for decomposition is preferaby 65 per cent. sulphuric acid, and the temperature employed not exceeding 150° C.

The zinc sulphide obtained in this way is treated further by the usual methods to prepare it as a pigment. If desired, the zinc sulphide raw material may be decomposed in two stages. In the first stage a lively conversion takes place; in the second stage a more highly concentrated acid is used.

Fire Prevention in Paint and Varnish Works

Precautions to be Observed

MEMBERS of the Manchester Section of the Oil and Colour Chemists' Association at a meeting on November 19 discussed the important subject of fire preventure in paint and varnish factories. Mr. S. T. Kinsman presided.

Mr. L. Salmon said that varnish factories were the most potent source of serious fires. The very fact that naked fire is necessary in the process of manufacture, coupled with the fact that inflammable oils, gums and thinning solvents are used, naturally provides all the necessary elements for small and large scale fires.

Gum "Running"

The first stage of the manufacture consists of "running" the gum. Natural copals are mostly used and are heated at temperatures ranging from 300° to 380° C., according to the hardness of the gum. The heating is continued until the gum is considered to be sufficiently "run," during which time about 25 per cent. has been distilled off in the form of fume, which passes up the fume hood and is largely condensed to form "fume" or "copal" oil. This is usually collected in containers either outside the building or at a considerable distance from the furnace. During this process there is always the risk of the vapour flashing when rising from the pot, and a flush fitting lid is always kept close at hand to extinguish a fire before it has time to assume serious proportions. The melted copal is then ready to receive the required amount of linseed oil, which is usually added by means of buckets. The oil is taken from a pot which has been heated on a nearby furnace to 250° to 300° C. Care is necessary during this process to prevent the spilling of hot oil near the furnaces. Although this may cause only a small fire, it is sufficient to distract the attention of the operatives and may result in a much larger blaze being started.

The oil-gum melt is then cooked at 300° to 320° C. until it has attained the correct consistency. At this point the driers are added. These consist chiefly of the oxides or salts of lead, manganese and cobalt, and are introduced into the pot, either in powder form or in the form of paste made with linseed oil. Particular care is needed during this process as a flash is liable to occur, most particularly during the addition of manganese in the form of dioxide or hydrated oxide. The operator is usually ready to smother the flame with the lid. The pot is then removed from the furnace and allowed to cool to about 200° C., when the thinners consisting of turpentine or white spirit are added. It is very important that this operation should be carried out completely away from any possible source of fire, preferably in the open air outside the building. Serious fires have been caused by the spirit vapours travelling many yards from the pot to some source of fire, flashing back across the building and often setting fire to a battery of pots in a similar stage of manufacture.

Cracked Varnish Pots

Premises where varnish manufacture takes place should be as draughtless as possible, for, there are always inflammable vapours rising from the pots, which may easily be blown on to the furnaces, which are either coke, oil fuel or coal gas fired. The latter two types of furnace are now in more general use and are much superior from the point of view of safety, as the source of fire can be extinguished before removing a pot from the furnace in cases of overheating or frothing, which are always liable to occur and which require prompt action in removal to prevent an overflow from the pot. The copper bottoms of the pots are also liable to crack with constant usage. This misfortune usually happens during the "running" of the gum, but often does not reveal itself until the oil has been added. The varnish melt then being in a more or less limped condition, trickles through the crack and burns in the furnace. The pots should be lifted a short way after the addition of the oil, or the leakage may not be detected immediately, this causing serious overheating or a tendency for the crack to widen. Prompt removal from the furnace is again essential and to cope with this eventuality a bed of sand should always be available on which to place the damaged pot.

Probably the worst type of fire in varnish manufacturing plants can be caused during the manufacture of stand oils. These are manufactured in both open pots and large enclosed kettles. The temperature of operation is usually about 300° C. Overheating is the danger to avoid as there is a tendency for exothermic reactions to develop when the temperature has exceeded 300° C. to any great extent. Violent frothing sets in, culminating in the pot boiling over. The heat from the furnace is sufficient to cause the oil to flash from a considerable distance and spontaneous ignition very often occurs. When once the fire commences it is most difficult to extinguish. The atmosphere quickly becomes intolerable and unless the main fire fighting appliances are immediately brought into use there is grave risk of the building and plant suffering severe damage. In the case of small pot stand oil manufacture the operator should always be aware of the danger and have the opportunity of removing the pot from the fire before the final danger point is reached.

Heating Large Enclosed Kettles

In large enclosed kettles, however, a rigid temperature control must be maintained and it is always advisable to have two thermometers in use, to act in confirmation with each other. The kettle should be filled to such an extent that air space over the oil is small when the operation has reached maximum temperature. An additional precaution which is now being widely taken is to allow a small quantity of CO_2 to bubble through the oil, which ensures only an inert atmosphere being present. All valves and joints on the kettle should be periodically examined and repacked where necessary to prevent oil leakages.

The storage of raw materials is another point which deserves attention. Gums, rosin, shellac, etc., are better kept in separate storage in a building adjacent to the varnish house, as these materials, although quite harmless under normal conditions, only add fuel to the flames in the case of an outbreak of fire. Linseed oils and solvents are best kept in large storage tanks well away from the varnish house and connected to the latter by pipe lines and pumps if necessary. Care should be taken to destroy old cleaning rags, oily waste, etc., each day before the closing time of the works, and to store workmen's overalls in a safe place.

For use in emergencies, foam extinguishers are probably the best means of initial attack on varnish fires. Their use in petroleum plants, and similar undertakings is too well known to need any further description here. It is a great advantage to have a works' fire brigade recruited from men working in *all* departments. In the event of a fire commencing in any department, some men are always at hand to prepare the appliances with the greatest possible speed, whilst the remainder of the brigade are assembling. The definite responsibility for the maintenance of all fire fighting apparatus in good condition is vested in the brigade, which, above all, realise that it is the livelihood of themselves and their immediate companions that is at stake if a disastrous fire should threaten their place of employment.

Mr. J. S. Barker, B.Sc., studied the problem from the standpoint of colour factories. He said practically every dry colour factory sooner or later has the experience of a fire

caused by spontaneous combustion. The prevention of this type of fire is obviously difficult since small specimens in the laboratory usually appear to be quite inert and cannot be persuaded to burn even when every assistance is given. It is well known that most oxidisable materials can be made to ignite spontaneously if they are in a sufficiently finely divided condition, the classic example being iron dust dropped into oxygen. The dangers of coal dust and flour are also known only too well. There is little doubt that practically all cases of spontaneous combustion of colour powders are due to the same cause.

Fires Due to Prussian Blue

Certain pigments as usually manufactured are in a highly dispersed condition without the use of special dispersing agents. Prussian blue is an example. This material is quite safe, however, at ordinary temperatures. Trouble usually occurs only when the blue is being ground, for example, on an edge runner, and only when in the pure state. An effective precaution under these conditions is to grind the colour for a period of a few minutes only and then to raise the rollers and allow the machine to run free so that cold air enters the colour and keeps down the temperature. If the colour is passed through a high speed pulveriser of the impact type precautions must be taken to remove any free metal. An electro-magnet is a very efficient safeguard. It is also necessary to ensure that the colour is free from grit as this also is capable of producing a spark in the machine. It is usual to sieve the colour while still in aqueous suspension in order to eliminate such large hard particles. Another pigment which is highly dispersed in normal manufacture is logwood black. This is a much more dangerous proposition and it is not advisable to reduce the moisture content of the dry powder to a figure lower than about 20 per cent. It should be mentioned here that these remarks apply to specific preparations and different manufactures may have very different properties.

The demand for highly dispersed pigments is due to the tinctorial advantages they give and many organic pigments which formerly were quite inert are now much more prone to ignition. It will be obvious that the greatest danger occurs during drying. The modern stove is highly efficient with hot air passing over the pigment in rapid motion. From personal observations it is considered that fires occurring under these conditions are due to small particles of pigment, either on the surface of the mass or in suspension in the hot air. On one occasion a sheet of flame was observed on opening a stove door. In other cases trays of colour have been found to be smouldering.

Drying Organic Pigments

Organic pigments containing rosin seem to be more liable to ignition than other types; perhaps because rosin is one of the most efficient dispersers for this class of pigment, or perhaps because resinates themselves are not inert. It is known that cobalt resinate powder will ignite spontaneously even under ordinary storage conditions. The trouble experienced in the drying of such pigments can effectively be overcome by taking suitable precautions both during preparation and in storing. For example (again with reference to a specific manufacture) it is found that a small percentage of soluble metallic inorganic salt (*e.g.*, barium, calcium, sodium, chlorides or phosphates) left in the colour provides very good protection. Examination shows that the salt is concentrated in a thin layer on the surface.

During drying, although not strictly economical, air should not be re-circulated to obtain saturation. A fairly large proportion of fresh air reduces risk. Thermostatic control should be provided and a reasonably low drying temperature maintained. Stoves should be of the unit type, constructed of metal and isolated. Contamination and mixtures of otherwise stable pigments are often unsafe. Prussian blue powder in contact with small amounts of drying oils will slowly rise in temperature and eventually smoulder and take fire. A few drops of linseed oil allowed to fall into a keg of colour is quite sufficient cause for a perfectly good fire. Certain pigments containing two or more nitro groups should not be mixed with oxides of lead. Fires have also been experienced with lead chromes when these have been incompletely wetted by drying oils. The trouble occurs when the preliminary pugging operation is interrupted before complete wetting of the pigment has been obtained

The Special Areas Report

Encouraging Results of the Year's Work

SIR GEORGE GILLETT'S report on the Special Areas for the twelve months ending September 30, published on Tuesday, makes more cheerful reading that its predecessor of a year ago. Although the Commissioner's powers to assist normal business "operating for gain" were only granted last May, a number of new factories have already been started in the Areas, notably in the Trading Estates established near Newcastle, Cardiff and Glasgow. During the year, unemployment in the Areas has fallen by over 25 per cent. Only a small part of this reduction is due to transference of labour, and the Commissioner estimates that the greater part of the recovery has been independent of armament work. Another encouraging feature is the reduction of unemployment in South Wales by 30 per cent., but as there are still over 200,000 insured workers unemployed in the Special Areas, there is obviously a long way to go before the problem can be regarded as solved.

Sir George Gillett follows his predecessor, Sir Malcolm Stewart, in suggesting that Government measures may have to be taken in regard to the location of industry. There is, perhaps, something to be said for defining where new factories may *not* go, but any attempt to force firms to establish new branches in particular areas, irrespective of the policy of the proprietors, would almost certainly defeat its object. The greatest need of the Areas to-day is the introduction of new industries on a self-supporting basis, and provided that business men will do their part in exploring the prospects, we believe that the facilities already provided by the Special Areas (Amendment) Act, of 1937, offer sufficient inducements already. This Act has only been in operation for about six months, and the Commissioner himself admits that what is most wanted is twelve months of steady work with the powers already granted. He adds that many business men are not yet aware of the considerable inducements that are already available.

Dyeing Rayon with Logwood

Improved Method of Mordanting

AN improved method of mordanting rayon prior to the application of logwood, is reported by Drew (*Amer. Dyestuffs Rep.*, 1937, *26*, 623 625). Existing methods for the application of logwood involve the use of red oxide of iron as a mordant, which is much inferior to the yellow oxide, and the aim of the investigation was to develop a method of mordanting the fibre with yellow ferric oxide.

It was found that after boiling ferric chloride solution for a considerable period, the take-up from it of yellow oxide by the cloth was much increased, but that the mordanting power reverted to its normal value after standing some time. The chloride solution was therefore neutralised with sodium hydroxide, and then boiled to peptise the ferric oxide. The solution thus obtained had excellent mordanting characteristics, and acetate rayon treated with it was capable of being dyed with logwood to a rich black shade. In a laboratory-scale dyeing plant a 15-20 minutes immersion of the cloth in the mordanting bath caused a take-up of ferric oxide of ½ per cent. at 50° C. Dyeing was carried out in a logwood bath of concentration of 1-3 per cent. A particular advantage of the process is that the mordanted rayon can be dyed to the same shade whatever its initial colour.

Chemical Matters in Parliament

Investigations of Falmouth Oil from Coal: Committee Criticised

THE subject of the production of oil from coal for defence was raised in the House of Commons on November 22, when Mr. A. Edwards, in reply to a question put to the Minister for the Co-ordination of Defence last week, received the statement that the Minister had "no reason to suppose that the Falmouth Committee have not received all the information which they require as to processes for the production of oil from coal."

Particulars of Foreign Processes

"I am," said Mr. Edwards, "very much concerned to know whether committees appointed out of controversies of this kind are set up merely to silence controversy or are an attempt to solve the problem. In the case of the Falmouth Committee the terms of reference were: 'To consider and examine the various process for the production of oil from coal.' There was more, but that was the important part of the terms of reference. We have a Fuel Research Department which has been in existence for 20 years, and has spent something like £3,000,000 of this country's money." In consequence, he (Mr. Edwards) wanted to know whether the Fuel Research Department had been asked to give evidence to this Falmouth Committee, and if so did it advocate the production of oil by the hydrogenation process or one or other of the low-temperature processes. "It seems strange," he continued, "that this committee should have devoted considerable time and expense to obtaining particulars of foreign processes, and yet that those with processes which offer tremendous advantages to the nation and which are available in this country have not been afforded an opportunity to give evidence before them. I want the Minister to say whether the committee have had particulars of the Fischer-Tropsch process, and how many people with processes of the low-temperature type have been allowed to give evidence before this committee.

"I am given to understand that the committee ruled that they were going to ask for evidence only on general principles regarding low-temperature carbonisation processes, but they chose the one man who has a particular process and denied other people who had processes an opportunity of giving evidence. This committee is working by that method, of taking evidence from Colonel Bristow, who is the biggest man in the low-temperature carbonisation process and does not produce oil from coal. His process is not intended to produce oil from coal. It produces a fuel. It does, as a matter of fact, get a certain amount of oil, but very little. Other processes have been put forward in which you do get oil from coal, and that is the question which this committee was asked to look into and to solve; not the production of a fuel. The promoters of one process offered to the committee proved that it could produce oil from coal upon a commercial basis and with no assistance from taxation. They offered to pay the tax if they could run their process commercially."

The Fischer-Tropsch Process

"The other process," said Mr. Edwards, "definitely sets out to produce oil from coal, and I have had the pleasure of seeing it. I knew nothing about it until a day or two ago, when I was given an opportunity by the Fischer-Tropsch Co. to go and examine their process. The Minister did not know anything about it until I came back from the visit and informed the House that the work was being done at a profit. Imperial Chemicals told me that they were making a profit, and in that case they were not benefiting the taxpayer. If a man comes along who is genuine and who can produce all the oil required from coal in this country, he does not have a chance to prove it. He is not given an opportunity."

The process to which he referred, continued Mr. Edwards, was a process which produces oil. The firm is not asking for assistance from the Government, but is merely asking to be allowed to prove its claim that, if it is allowed to add a refinery to its plant, as it wishes to do, it can produce 100 gal. of oil per ton of coal processed. He wondered if the Minister has had anything like that submitted to him. "If refineries are put down in this country, they are going to conflict with vested interests, and there is a considerable amount of British capital invested in refineries abroad. If a refinery is put down in this country, it will refine oil. It will be able to refine any crude oil that is brought to this country, and there are vested interests which do not want that to happen. The milling of flour abroad would never be thought of by the interests in this country; we import wheat and mill it here, and that is a fair analogy with what should be done with oil. But there are very big interests which have investments abroad, and I want to be quite sure that this committee is not being unduly influenced by those interests."

Sir Thomas Inskip, Minister for Co-ordination of Defence, said he was under the impression that Mr. Edwards' question dealt with yet another of these processes, of which they are several. In addition to the Fischer process, there is also the Freeman process, the Cannock process, and others. Some have been tried only on a laboratory scale, some on a large scale, and a great deal of information has been acquired as to these processes in the last 10 or 12 years, more particularly in the last few years. Contrary to what he had expected, he (Sir Thomas Inskip) now gathered that Mr. Edwards was interested in a process which had been tried on a large scale. He (Sir Thomas Inskip) could not possibly contemplate giving directions to a committee which he had appointed with the knowledge of the House to conduct a particular inquiry. He believed it would be absolutely foreign to practice that any Minister should first appoint a committee and then attempt to supervise the way it carried out its work. "I am as anxious as anyone to see a process evolved that would be economically and scientifically possible for producing oil from coal," added Sir Thomas Inskip, at a later stage.

Kenya (Oil Exploration)

In the House of Commons, on November 18, Mr. McEntee asked the Secretary of State for the Colonies whether the negotiations about the oil exploration licence issued to the D'Arcy Exploration Co., Ltd., and the Anglo-Saxon Petroleum Co., Ltd, in Kenya have yet resulted in the determination of that licence by mutual consent; if so, what are the reasons for this step; whether any applications have been made by other oil concessions; and if so, whether licences have been granted?

In reply, Mr. Ormsby-Gore said that in August last the companies in question gave three months' notice of their desire to surrender their licence on the ground that the results of their survey had proved unfavourable. As other applications for oil exploration licences were pending, the three months' notice was waived by mutual consent, and the companies' licence was determined with effect from September 30. He understood that the other applicants for oil exploration licences have been informed that the Government of Kenya is now prepared to consider their applications, if they so desire.

Defence (Calcium Carbide Production)

Captain A. Evans asked the Minister for the Co-ordination of Defence if he is now in a position to make any statement with regard to the report of the Calcium Carbide Factory Investigation Committee; and whether it will be possible to make arrangements to encourage the erection of such a factory in South Wales?

In reply, Sir Thomas Inskip said the committee, after full consideration of a number of schemes submitted for

the production of calcium carbide and allied products in the United Kingdom, recommended the scheme submitted to them by the British Oxygen Co. This scheme provides for the erection of two factories, one at Port Talbot in South Wales, the other at Corpach in the West Highlands. The company have assured me that pending their obtaining the necessary powers for the Corpach factory they intend to proceed at once with the erection of the factory at Port Talbot. On this basis the scheme is regarded by the Government as satisfactory, and the company was taking the necessary steps to reintroduce the Caledonian Water Power Bill.

Sale of Poisons

Captain Plugge asked the Home Secretary whether his attention has been called to the loss from time to time of deadly poisons which necessitates the broadcasting of warnings to the public; and whether, when such poisons are similar to certain sweetmeats, he will take steps to ensure their being so coloured or wrapped that there is no possibility of their being mistaken for confectionery?

In reply, Sir Samuel Hoare said he was aware of the occurrence, but did not think that the steps in the second part of the question would be practicable, or likely to provide any real safeguard. As has been pointed out in reply to previous questions on this subject, the true remedy lies in the exercise of greater care by persons who have charge of these dangerous articles.

Palestine (Dead Sea Salt Concession)

On November 19 Mr. Groves asked the Secretary of State for the Colonies, whether he will move to appoint a Select Committee to inquire into the complaints of Mr. W. Maitland Edwards that the Dead Sea salts concession was granted to Palestine Potash, Ltd., under circumstances which effected an injustice to him?

In a written answer Mr. Ormsby-Gore said " No."

Commercial Conditions in British East Africa

Strong Position of United Kingdom in Import Trade

ACCORDING to a report on economic and commercial conditions in British East Africa just published for the Department of Overseas Trade (H.M. Stationery Office, 1s. 6d.) the aggregate value of the import and export trade of the combined territories for the past year exceeded the figure for 1935 by nearly £4 million and, at a total of £28,534,759, has been exceeded in the past decade only in the years 1928 and 1929 by figures of £30,602,011 and £31,650,773 respectively. The visible balance of trade was in favour of the territories to the extent of nearly £5 million in the past year.

The United Kingdom and India are of major importance both as purchasers of produce and suppliers of East Africa's needs. With only a few exceptions the United Kingdom offers a market for all the commodities East Africa exports, though some, such as cloves, are sold elsewhere, in larger quantities for specialised uses. Trade with India can be ascribed, on the one hand, chiefly to purchases of raw cotton for the use of Indian mills and, on the other, to imports from India of commodities which find a sale mainly to the very considerable Asiatic population of the territories.

With regard to chemicals, drugs, dyes and colours the position of the United Kingdom has been well maintained. Foreign competition is more apparent in drugs, medicines and medical preparations, but to a great extent these are proprietary lines. Of the total imports from Germany valued at £32,570, drugs, etc., represent a value of nearly £18,000. The pre-eminence of the United Kingdom in this group is partly created by a virtual monopoly of the paint, colour and varnish trade. Germany is the principal source of supply of dyes and carbonic acid gas and the Union of South Africa of carbide of calcium.

United Kingdom manufacturers pay close attention to the market for disinfectants and insecticides. Of the total importation in 1936, insecticides into Kenya and Uganda alone were valued at over £24,000. Dairying and sheep raising in Kenya account for imports of dips last year from the United Kingdom valued at £6,000 out of a total of £6,034. Tanganyika's purchases of dipping preparations were valued at £626 only. Government purchases of disinfectants in the year 1936 were valued at £2,281.

Great attention is paid to the paint and varnish market by United Kingdom manufacturers of paint who continue to enjoy virtually a monopoly. Japan made a little progress last year, imports from that country amounting to 560 cwt. as compared with 328 cwt. in 1935. Apart from Japan, the most serious competition met with was from Germany and the United States of America, imports from which countries amounted to 518 cwt. and 296 cwt. respectively out of a total aggregate weight of 23,490 cwt. imported into the combined territories. Government imports, entirely from the United Kingdom, amounted to 8,728 cwt. in 1936.

Although United Kingdom manufacturers of drugs, medicines and medicinal preparations have lost some ground, close attention is now being paid to this market and it is anticipated that recent efforts to study East African conditions and requirements will result in a greater volume of business in these lines being secured by the United Kingdom. Changes in distribution arrangements are probably responsible for the increase in imports from the United States. As might be expected Tanganyika affords the best market in the East African territories for German products, imports into that territory amounting in value to £11,571 in 1936.

The position of the United Kingdom with regard to lubricating oils has been maintained in relation to total imports which though less than in 1935, are greater in volume than in any other recent year. The Dutch East Indies, the principal source of supply until the year 1934 when supplanted by the United States, have recovered ground a little.

Imports in the chemical groups are summarised as follows:—

	1935 £	1936 £
Chemicals, drugs, dyes and colours:	245,314	271,203
From United Kingdom	167,074	184,169
,, Germany	32,114	32,570
,, United States	10,288	13,507
Disinfectants and insecticides:	46,535	58,208
From United Kingdom	28,945	40,247
,, Belgium	4,353	5,248
,, Germany	8,699	6,044
,, United States	3,226	4,487
Paints, varnishes, etc.:	42,630	55,605
From United Kingdom	42,215	48,522
Drugs, medicines and medicinal preparations:	95,977	96,118
From United Kingdom	64,197	60,174
,, Germany	15,830	17,735
,, United States	4,524	6,587

Exports of sodium carbonate from Kenya and Uganda amounted to 46,549 tons in 1936, as compared with 38,723 tons in 1935; refined sugar, 306,308 cwt. (337,874 cwt.); wattle bark extract, 110,272 cwt. (101,888 cwt.).

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Oil refining with chromyl chloride. *Chem. Trade J., 101,* 460.

Cellulose, Paper

Grinding properties of celluloses. Noll, *Papier-Fabrik. (techn. Teil), 35,* 393-398.

Pulp bleaching under ultra violet light. Hirschkind, Pye and Thompson, *Paper Trade J., 105,* 118-119.

Viscosity of cellulose solutions. Rieser and Ebert, *Annal., 532,* 94-103.

Bleaching, Dyeing, Finishing

Dyeing with Hydrone blues. Colomb, *Teintex, 2,* 664-675.

Identification of fibres and analysis of fibre mixtures. Cryer, *Text. Manuf., 63,* 465-466, 471.

Fibres of synthetic high molecular substances. Standinger, Standinger and Sauta, *Melliand Textilber., 18,* 849-853.

Free dye sulphonic acids of acid wool dyestuffs. Ender and Müller, *Melliand Textilber., 18,* 906-907.

Particle size in dyestuff solutions and in dyeing processes. Valkó, *Osterreichische Chem. Ztg., 40,* 465-472.

Dyeing of wool. "Technologist," *Text. Mercury, 97,* 517-519.

Glass, Ceramics

System alkali oxide–CaO–SiO_2–CO_2 in glass smelting. Kröger, *Glastechn. Ber., 15,* 371-379.

Refractory clays. Everhart, *J. Amer. Ceramic Soc., 20,* 353-359.

Ceramics for high frequency insulation. Thurnauer, *J. Amer. Ceramic Soc., 20,* 368-372.

Metals, Electrometallurgy

Reduction of zinc oxide with various reducing agents. Klärding, *Metall u. Erz., 34,* 556-558.

Protecting steel against rust by phosphatation. Vertes, *L'Ind. Chim., 24,* 650-653.

Plated steel for chemical apparatus. Trautmann, *Chem. Fabrik, 10,* 463-468.

Fats, Oils, Waxes

Soap manufacture. Bauschinger, *Fette u. Seifen, 44,* 352-355.

Manufacture of margarine. Dopfer, *Fette u. Seifen, 44,* 383-386.

Polymerisation of fats: Action of gaseous sulphur chloride. Kaufmann, Baltes and Mardner, *Fette u. Seifen, 44,* 390-394.

Saponification of soya phosphatides. *Seifensieder Ztg., 64,* 802-803.

Modern detergents. Mullin, *Soap, 13,* 30-33, 74.

Coal as raw material for the soap industry. Imhausen, Fette *u. Seifen, 44,* 411-415.

Action of water on the drying of fatty oils. Auer and Lewis, *Paint Varnish Prod. Manager, 17,* No. 5, 12-18.

Paints, Pigments, Resins

High gloss inks. Chandler, *Amer. Ink Maker, 15,* No. 9, 39-47, 61.

Metallic phthalates. *Chem. Trade J., 101,* 450.

Fluorescence analysis: Testing of pigments. Grant, *Baint Manuf., 7,* 340-345.

Spar varnishes and refined linseed oil. Megert, *Farbe u. Lack,* 1937, No. 42, 486-487, 497-498.

Nitrocellulose stoving lacquers. Kraus, *Farben Ztg., 42,* 1,113-1,114.

Rubber, Plastics

Manufacture of oil cloth. Fritz, *Chem. Ztg., 61,* 833-836, 856-857.

Denture plastics. Johnson, *Chem. and Ind., 56,* 1,040-1,045.

Orientation of stretched rubber. Schossberger and Clews, *Kantschuk, 13,* 167-169.

Regeneration of used rubber. Kirchhof, *Kantschuk, 13,* 169-173.

Viscosity of concentrated solutions. Honwink, *Osterreichische Chem. Ztg., 40,* 472-475.

Casein glues. Hadert, *Gelatine Leim Klebstoff, 5,* 154-163.

Plasticising agents for nitrocellulose. Kraus, *Farbe u. Lack,* 1937, No. 43, 509-510.

Miscellaneous

Disinfectants. Berry, *Pharm. J., 139,* 541.

Wood in chemical apparatus. Kollmann, *Chem. Fabrik, 10,* 447-451.

Experimental tests of theories of salting-out effect. Albright. *J. Amer. Chem. Soc., 59,* 2,098-2,104.

Lignin and related compounds. Hawkins, Wright and Hibbert. *J. Amer. Chem. Soc., 59,* 2,447-2,448.

Sucrose from soya beans. Kraybill, Smith and Walter, *J. Amer. Chem. Soc., 59,* 2,470-2,471.

Personal Notes

DR. F. S. SINNATT has been appointed external examiner in fuel technology, for the Ph.D. thesis, at Sheffield University.

MR. R. J. TURNER, export manager of C. C. Wakefield and Co., Ltd., and chairman of the Institute of Export, has accepted an invitation to address the Publicity Club of London, on Monday, November 29. The subject is "Export—the life of the Empire."

Professor A. J. Allmand, D.Sc., F.R.S., who has been appointed from August 1, 1938, to the Daniell Chair of Chemistry tenable at King's College, University of London.

DR. EMMA R. CARR, head of the Department of Chemistry, Mount Holyoke, has been awarded the Francis B. Garvin gold medal, which was established by the American Chemical Society to honour women chemists of outstanding accomplishment.

LORD CADMAN, who is chairman of the Anglo-Iranian Oil Co., Ltd., has been appointed chairman of the new Government Departmental Committee on Civil Aviation, which is to inquire into the charges of inefficiency raised during a debate in the House of Commons.

KING LEOPOLD, of Belgium, visited the factory of the Leather Cloth Co. at Abbey Road, West Ham, London, on November 18. At the factory, he presented fifteen old employees with the medal of the Belgian Order de la Couronne. The firm was founded in 1857 by an Anglo-Belgian concern.

MR. FREDERICK BASCOMBE, F.I.C., was presented with a silver badge commemorating twenty-five years' honorary work for the Alexandra Rose Day Fund, on November 11. During those twenty-five years, in the course of organising collections for Rose Day, Poppy Day, etc., over £63,000 has passed through his hands. Mr. Bascombe is now 87 years of age.

DR. P. A. T. LEVENE, of the Rockefeller Institute of Medical Research, has been awarded the William H. Nichols medal of the New York section of the American Chemical Society, for 1938. Founded in 1902 to stimulate original research in chemistry, the medal goes to Dr. Levene "for his study of the configurational relationships of the simpler optically active organic compounds." Dr. Levene's researches in the field of biochemistry, extending over a period of forty years, have been recorded in some 400 publications. From a long series of early experiments dealing principally with nucleic acids and proteins, Dr. Levene gradually transferred his major interest to the carbohydrates and related compounds.

MISS CATHERINE WILSON KING has received the degree of B.Sc. in agriculture from Glasgow University, with first-class honours in agricultural chemistry.

SIR JAMES W. PATON was presented with his portrait in oils at a luncheon on November 18, celebrating the golden jubilee of Paton, Calvert and Co., metal polish manufacturers, of Liverpool.

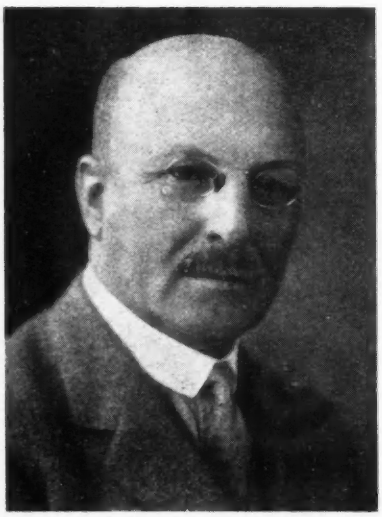
DR. E. BRIGHT WILSON, jun., assistant professor at Harvard University, has received the one thousand dollar award of the vAmerican Chemical Society for his experimental work in physical chemistry.

DR. E. B. HUGHES was elected chairman of the London and South-Eastern Counties Section of the Institute of Chemistry at the annual general meeting of the section held on Wednesday.

DR. RAYMOND EDWARD PRIESTLEY, of Melbourne University, has been appointed vice-chancellor and principal of Birmingham University. The resignation of Sir Charles Grant Robertson from that office, on account of age, will take effect in September, 1938.

MR. ADRIEN ALBERT, who was lately engaged in research in the chemical laboratories of the Pharmaceutical Society, left England for the United States on November 10, for the purpose of a tour of laboratories and institutions connected with chemistry and medicine. He will ultimately proceed to Australia to give a course of lectures at Sidney University.

DR. H. J. T. ELLINGHAM, of the Imperial College of Science and Technology, London, has been made reader in physical chemistry in the University of London; DR. C. F. GOODEVE, of University College, has become reader in chemistry; MR. C. W. DANNATT, of the Imperial College, Royal School of Mines, is now reader in metallurgy.



Sir Joseph Turner, principal of Sir Joseph Turner and Sons, aniline dye manufacturers, of Huddersfield, who, as announced last week, has been appointed Prime Warden of the Worshipful Company of Dyers.

MR. T. B. SMITH, manager of the Acklam and Newport Coke Works of Dorman Long and Co., Ltd., has been appointed manager of the Cleveland Coke Ovens in succession to Mr. T. Johnson, who has resigned. Mr. E. Harrison, assistant to Mr. Smith, has been appointed manager of the Acklam and Newport Coke Works.

OBITUARY

SIR SEYMOUR TRITTON, at one time chairman of the British Standards Institution, has died at the age of 75.

From Week to Week

A NEW PASTE, KNOWN AS KILFROST, underwent a successful trial on Wednesday in preventing ice-formation on aircraft.

THE NOTHERN ALUMINIUM CO. have announced the formation of an Aluminium Information Bureau at Bush House, London, dealing with all applications of the metal.

HINTS FOR COMMERCIAL VISITORS to the British dependencies in West Africa (Gambia, Sierra Leone, Gold Coast and Nigeria), with notes on methods of trading, have been published by the Department of Overseas Trade.

A NEW TANNERY IS TO BE ERECTED at Haverigg, in Cumberland, by the West Cumberland Industrial Development Co., Ltd., for the Millom Tannery Co., at an estimated cost of £30,000. About 150 people will be employed.

DURING HIS FORTHCOMING TOUR OF CORNWALL, King George will inspect the Camborne School of Mines, where two hundred tin miners in their underground attire will line up with students of the school as a guard of honour.

A FIRE BROKE OUT at a shellac works in London Road, Wallington, Surrey, last week. A large quantity of sulphuric acid in glass carboys became involved and the carboys were continually exploding and showers of glass and acid fell upon the firemen.

EXCHANGE RESTRICTIONS IN CERTAIN FOREIGN COUNTRIES are the subject of a new leaflet issued by the Department of Overseas Trade on November 1. (Ref. G.18873/37.) An indication is given of the extent to which, if at all, prompt payment of current trade debts is, according to the Department's information, at present prevented by exchange control.

A SUPPLEMENT to "Ciba Review" (No. 2), published by the Society of Chemical Industry in Basle, contains patterns of dress goods dyed with Neolan colours, which possess very good to excellent fastness to light, good fastness to perspiration and wear, and reservation of cotton and viscose effects. The method of application is a one-bath method producing level and well-penetrated dyeings.

THE GENERAL COMMITTEE OF THE PARLIAMENTARY SCIENCE COMMITTEE have elected the following officers for the coming year: President, Lord Dudley; vice-president, Sir Arnold Wilson, M.P.; chairman, Professor J. G. Kerr, M.P.; vice-chairman, Professor B. W. Holman; deputy-chairman, Mr. Alan Chorlton, M.P.; hon. secretary and treasurer, Mr. H. W. J. Stone. It was reported that during the last year three institutions, including the British Association, had been affiliated to the Committee.

THE MOVE BY THE TRADES UNION CONGRESS to bring scientists to the aid of industry was carried a stage further on November 23, when the General Council gave a private dinner to learn the views of representative scientists. Among scientists who accepted invitations to attend were: Sir John Orr, Professor J. B. S. Haldane, Professor P. M. Blackett, Professor G. Barger, Professor Lancelot Hogben, Professor A. C. G. Egerton, Sir Frederick Hopkins, Dr. J. D. Bernal, Sir Richard Gregory, Professor G. H. Boswell, Sir Daniel Hall, and Professor F. G. Donnan

THE FIRST PUBLISHED LIST OF EXHIBITORS at the forthcoming Empire Exhibition to be held at Bellahouston Park, Glasgow, May-October, 1938, includes: Anglo-American Oil Co., Ltd. (petrols and oils); Bakelite, Ltd. (bakelite synthetic resin products), The British Plastics Federation, Ltd. (plastics), Drysdale and Co., Ltd. (centrifugal pumps, water ring, vacuum pumps), Firth Vickers Stainless Steel, Ltd. (rustless steel in all manufactured forms), Thos. Firth and John Brown, Ltd. (alloy steels and steel testing equipment), International Bitumen Emulsions, Ltd., and International Combustion, Ltd. (products for roads and general industrial purposes, soil stabilisation demonstrations), Jet Glaze, Ltd. (paints), Kelvin, Bottomley and Baird, Ltd. (scientific instruments and apparatus), George Kent, Ltd. (metering and automatic control equipment), The Mond Nickel Co., Ltd. (specimens and models illustrating properties and uses of nickel), Montgomerie, Stobo and Co., Ltd. (paint, colours, preservatives, etc.), The Macfarlane Engineering Co., Ltd. (laboratory apparatus), Redline-Glico, Ltd. (lubricating oils, white spirits, petroleum products), John G. Stein and Co., Ltd. (refractories, firebricks, etc.), Sugar Refiners' Association (sugar machinery and general engineering plant), John Thompson (Wolverhampton), Ltd. (steelwork of all descriptions), C. C. Wakefield and Co., Ltd. (lubricants and applicable mechanical appliances), G. and J. Weir, Ltd. (power plant, pumps, distilling plant, compressors, etc.), Boots Drug Co., Ltd. (chemists' supplies), Cromessol Co., Ltd. (disinfectants, insecticides, sprayers, etc.), Fairy Dyes, Ltd. (dyes), Isdale and McCallum, Ltd. (soap, soap powder and allied products, glycerine), Sandeman Bros., Ltd. (soap, greases, oils, waxes, etc.), Swifto Manufacturing Co. (disinfectants, insecticides, perfumery, polishes, etc.), Charles Tennant and Co., Ltd. (chemicals and fertilisers), and John and James White (chromium compounds, and raw materials).

THE DISTILLERS CO. are to erect a pavilion at Bellahouston Park, Glasgow, on the occasion of the 1938 Empire Exhibition.

A GIFT OF £2,500 TO THE UNIVERSITY OF BRISTOL from colleagues and friends of Professor F. Francis, for a Francis scholarship for research in chemistry was announced on Wednesday.

AUSTRALIAN WOOL MANUFACTURERS and graziers have applied to the Tariff Board for heavy duties against German artificial fibre, which had not previously interfered with the Australian wool industry but now definitely constituted a danger.

COKE OVENS CAPABLE OF CARBONISING 180,000 TONS OF COAL per year are to be built at Cinderhill Colliery, Nottingham. The new plant will be operated by Suncole (Nottingham), Ltd., a subsidiary company of Bestwood Amalgamated Collieries.

THE STANTON IRONWORKS CO. announced on Tuesday that it had given notice of its intention to withdraw from the British Iron and Steel Federation. It was also intimated that the Staveley Coal and Iron Company intended to give similar notice.

AN OUTBREAK OF FIRE OCCURRED at the premises of the Distillers Co., Ltd., Glasgow, on November 9. The fire originated in the cooperage section of the distillery. The central section of the building was completely gutted. Damage is estimated at £10,000.

ACCORDING TO THE ANNUAL REPORT of the Steel Works' Association, Berlin, the world production of raw steel in the past year amounted to 124,000,000 tons. The previous record was in 1929, when it amounted to 122,000,000 tons.

TO CELEBRATE THEIR JUBILEE, J. G. Stein and Co., Ltd., firebrick manufacturers, High Bonnybridge, Castlecary, and Manuel, Stirlingshire, paid bonuses to their employees on November 19. Every worker with over one year's service received a bonus equivalent to a full week's wages.

STATISTICS PREPARED BY THE IMPERIAL ECONOMIC COMMITTEE show that the average weekly invoiced deliveries of margarine by United Kingdom makers totalled 3,788 tons during the four weeks ended October 30, as compared with 3,477 tons in the five weeks to October 31, 1936, a rise of approximately 9 per cent.

SCOTTISH OILS AND SHELL MEX, LTD., are to be allowed to erect their petroleum depot at North Ness, Lerwick, for which sanction had been previously refused by the Shetland County Council. This decision follows a Government inquiry held at Lerwick, by Dr. H. E. Watts, Home Office inspector of explosives.

FISON, PACKARD AND PRENTICE, LTD., of Ipswich, the well-known manufacturers of chemical fertilisers, have decided that, as they can no longer be dependent on others for their supplies, they intend to erect a synthetic nitrogen plant at Scunthorpe, Lincolnshire, with an output of 60,000 tons of sulphate of ammonia per annum.

THE MINERALOGICAL SOCIETY at their anniversary meeting held on November 4, elected the following officers:—President: Dr. L. J. Spencer; vice-presidents: Professor P. G. H. Boswell and Professor C. E. Tilley; treasurer: Mr. F. N. Ashcroft; general secretary: Lieut.-Colonel W. Campbell Smith; foreign secretary: Professor A. Hutchinson; editor of the Journal: Dr. L. J. Spencer.

THE DECENNIAL INDEX of *The Analyst* for 1926-1935 (Vols. 51 to 60 inclusive) has now been published for the Society of Public Analysts, by W. Heffer and Sons, Ltd., price 25s. It has been compiled by Mr. M. B. Elliott. Authors occupy 138 pages; subjects, 325 pages. There is also a 2-page list of errata for the volumes concerned.

THE SOUTH WALES MINERS' FEDERATION has decided to support the claim of coke-oven and by-product workers at the works of Richard Thomas & Co., Ltd., at Ebbw Vale, Mon., that they are entitled to continue work on the new plant at Ebbw Vale under the general agreement between the South Wales Coke Producers' Association and the South Wales Miners' Federation. The S.W.M.F. decision followed a report by the men that the company had suggested that the wages of the men should in future be governed by the agreement with the blast furnacemen and the Iron and Steel Trades Federation.

AT THE ANNUAL GENERAL MEETING of the London and South-Eastern Counties Section of the Institute of Chemistry, held at Palace Hotel, Bloomsbury Street, W.C.1, on Wednesday evening, the following officers were elected:—Chairman, Dr. E. B. Hughes; vice-chairmen, Mr. M. Bogod, Mr. F. G. Edmed; hon. treasurer, Mr. C. A. Adams; and hon. secretary, Mr. R. F. Innes. The following were elected to the committee: District Member of Council, Mr. J. R. Nicholls; Fellows: Mr. C. T. Abell, Dr. H. Baines, Dr. Campbell, Mr. R. C. Chirnside, Mr. R. L. Collett, Mr. C. A. Bassett, Mr. D. M. Freeland, Dr. J. Grant, Mr. E. M. Hawkins, Mr. A. S. Houghton, Mr. G. A. Stokes, Mr. H. A. Williams. Associates: Dr. A. Batley, Mr. J. G. Maltby, Dr. G. L. Riddell, Mr. W. F. Pavitt, Mr. S. Stevens, Mr. A. W. H. Upton. During the past year the membership has increased by 137, giving a total of 2,664. Following the meeting a smoking concert was held.

THE COST OF THE CARBIDE FACTORY TO BE BUILT at Annat, near Corpach, by the British Oxygen Co., Ltd., will provide employment for at least 300 workers.

BETWEEN 100 AND 200 PEOPLE ARE OUT OF WORK as a result of a fire which partially destroyed the Crosland Hill factory of Standard Fireworks, Ltd., Huddersfield, last week.

THE PROMPT ACTION OF HUDDERSFIELD CORPORATION FIRE BRIGADE on November 20, prevented what might have been a very serious fire at the Huddersfield works of the British Dyestuffs Corporation, Ltd.

SCOTTISH OILS, LTD., a subsidiary of the Anglo-Iranian Oil Co., Ltd., has received a claim from the National Union of Shale Miners and Oil Workers for a 10 per cent. increase in wages plus eight days' holiday with pay.

OVERHEATING OF COCOA BEANS in a drying machine at the British Cocoa Mills, Tower Street, Hull, is believed to have been the cause of an outbreak of fire which occurred on November 20. The burning beans gave off such dense smoke that the firemen had to use gas masks to enable them to get at the seat of the fire.

THE SCOTTISH SECTION OF THE OIL AND COLOUR CHEMISTS' ASSOCIATION held their annual dinner at the St. Enoch Hotel, Glasgow, on November 19, Mr. J. Milligan, chairman of the Scottish Section, presiding. Sir Charles A. Mander, Mayor of Wolverhampton, proposed the toast of "The Scottish Section of the Association."

GOOD PROGRESS IS BEING MADE with the test bore of the Anglo-American Oil Co., at Darcy, near Dalkeith, Midlothian, where oil is expected to be found.

TWENTY-FIVE EMPLOYEES of the Stork Margarine Factory, Purfleet, Essex, were recently presented with gold watches to mark their attainment of 15 years with the firm.

TATE AND LYLE, LTD., will shortly announce the conclusion of negotiations for the acquisition of the two Jamaican sugar factories of the United Fruit Co. of America. The consideration is understood to be about £650,000.

THE PRODUCTION OF ZINC IN AMERICA during October amounted to 52,600 tons, compared with 50,000 tons in September. Deliveries totalled 40,300 tons, against 47,700 tons, while stocks at the end of October aggregated 25,800 tons, compared with 13,500 tons at the end of September.

IT HAS BEEN ANNOUNCED that, as from January 1, freight rates from United Kingdom to Eastern Canadian and United States ports are to be raised by all the 15 lines in the Transatlantic Conference by 10 per cent. Rates from Britain to North Pacific ports will be increased on most cargoes.

HIGH DUTY ALLOYS, LTD., have issued a data sheet relating to Hiduminium RR.77, which is an aluminium base alloy with a specific gravity of 2.8 developed mainly for use in highly stressed structural parts, is claimed to be unsurpassed on a yield strength to weight basis by any other material so far available for this purpose.

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2. at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Applications for Patents

MANUFACTURE OF PURIFIED SULPHITE CELLULOSE WASTE LIQUOR.—G. W. Johnson (I. G. Farbenindustrie, A.-G.) 29996.

CONCENTRATION OF AQUEOUS HALOHYDRIN SOLUTIONS—Naamlooze Vennootschap Bataafsche Petroleum Maatschappij. (Holland, Nov. 17, '36.) 30143.

MANUFACTURE, ETC., OF TEXTILE MATERIALS.—W. Pool. 29632, 29633, 29634.

PRODUCTION OF 4-AMINOBENZENESULPHONAMIDE COMPOUNDS.—J. Rosicky. (Czecho-Slovakia, Nov. 4, '36.) 29741.

HYDROCARBON OIL CONVERSION.—Naamlooze Vennootschap Nieuwe Octrooi Maatschappij. (March 18.) (United States, April 1, '36.) 29990.

MANUFACTURE OF ALKALI SUB-SILICATES.—Pennsylvania Salt Manufacturing Co. (March 31, '36.) (United States, April 10, '35.) 29997.

MANUFACTURE OF SILICA GEL.—Soc. Anon. des Produits Chimiques de Laeken. (Belgium, Nov. 5, '36), 29671; (Belgium, Sept. 9), 29672.

MANUFACTURE OF COMPOUNDS OF THE TYPE OF OESTRADIOL ESTERIFIED IN 3-POSITION.—Soc. of Chemical Industry in Basle. (Switzerland, Nov. 20, '36), 30081; (Switzerland, Dec. 24, '36), 30082; (Switzerland, March 9), 30083; (Switzerland, Oct. 16), 30084.

MANUFACTURE OF PARTIALLY ESTERIFIED COMPOUNDS OF THE DIHYDRO-OESTRIN SERIES.—Soc. of Chemical Industry in Basle. (Switzerland, Nov. 20, '36), 30085; (Switzerland, Dec. 24, '36), 30086; (Switzerland, Feb. 6), 30087; (Switzerland, March 8), 30088; (Switzerland, Oct. 16), 30089.

REINFORCEMENT OF SYNTHETIC RESINOUS MATERIALS, ETC.—Aero Research, Ltd., N. A. de Bruyne, and De Havilland Aircraft Co., Ltd. 31132.

PLASTIC COMPOSITIONS.—Bakelite, Ltd. (United States, Nov. 19, '36.) 31159.

SYNTHETIC RESIN SHEETS, ETC.—Bakelite, Ltd. (United States, Nov. 24, '36.) 31160.

APPARATUS FOR CARRYING OUT CHEMICAL REACTIONS.—B. Berghaus. (Germany, Nov. 28, '36.) 31545.

MANUFACTURE OF CALCIUM ARSENATE.—Bolidens Gruvaktiebolag. (Sweden, Sept. 9.) 30961.

ALUMINIUM ALLOYS.—T. F. Bradbury. 31476.

PRODUCTION OF SULPHURETTED HYDROGEN.—G. W. J. Bradley. 31207.

ORGANIC COMPOUNDS.—Celluloid Corporation. (United States, Nov. 19, '36.) 31328.

ANTHRAQUINONE VAT-DYESTUFFS.—J. Deinet, and E. I. du Pont de Nemours and Co. 31174.

MANUFACTURE OF HYDROGENATION PRODUCTS.—Deutsche Hydrierwerke, A.-G. (Germany, Nov. 14, '36.) 31329.

STYRENE POLYMERISATION.—E. I du Pont de Nemours and Co. (United States, July 22.) 31102.

VAT-DYESTUFFS.—E. I. du Pont de Nemours and Co. (United States, Dec. 7, '36.) 31389.

METHOD OF TRANSPOSING 1 : 2-DICHLOROBUTENE-(3).—W. W. Groves (I. G. Farbenindustrie.) 31130.

MANUFACTURE OF NITROGENOUS ARTIFICIAL MATERIALS.—W. W. Groves (I. G. Farbenindustrie.) 31131.

MANUFACTURE OF ORGANIC COMPOUNDS.—Galicysjskie Towarzystwo Naftowe Galicja Spolka Akcyjna, W. J. Protnowski, and J. Winkler. (Poland, Dec. 2, '36.) 31052.

MANUFACTURE OF ARTIFICIAL FIBRES.—W. W. Groves (I. G. Farbenindustrie.) 31231.

DISINTEGRATION OF ALKALI CELLULOSE PULP.—W. W. Groves (I. G. Farbenindustrie). 31232.

MANUFACTURE OF BASIC METHINE DYESTUFFS.—W. W. Groves (I. G. Farbenindustrie.) 31310.

MANUFACTURE OF SENSITISED PHOTOGRAPHIC SILVER HALIDE EMULSIONS.—W. W. Groves (I. G. Farbenindustrie). 31479.

MANUFACTURE OF CARBOXYLIC ACIDS.—W. W. Groves (I. G. Farbenindustrie.) 31610.

SEPARATION OF OIL, ETC., FROM GASES.—F. Heather. 31167.

MANUFACTURE OF COMPOUNDS from aceto-halogen-sugars and nicotinic acid amide.—F. Hoffmann-La Roche and Co., A.-G. (Switzerland, Dec. 8, '36.) 31608.

MANUFACTURE OF ACID WOOL DYESTUFFS of the anthraquinone series.—I. G. Farbenindustrie. (Germany, Nov. 12, '36.) 31005; (Germany, July 3.) 31006.

COATING-MATERIALS.—Imperial Chemical Industries, Ltd., J. W. C. Crawford. 31175.

MANUFACTURE OF UNSATURATED COMPOUNDS from chlorinated hydrocarbons.—Imperial Chemical Industries, Ltd., and J. W. C. Crawford. 31176.

MANUFACTURE OF CEMENT.—Imperial Chemical Industries, Ltd. 31390.

FORMING OF POLYVINYL ACETAL RESIN SHEETS.—L. Mellersh-Jackson. (Fiberloid Corporation). 31635.

MANUFACTURE OF STABLE RESINS.—L. Mellersh-Jackson. (Fiberloid Corporation). 31636.

PLASTICISED POLYVINYL ACETAL RESINS.—L. Mellersh-Jackson. (Fiberloid Corporation). 31637, 31638, 31639.

MANUFACTURE OF ORGANIC ACIDS.—G. H. Johnson (I. G. Farbenindustrie.) 31021.

MANUFACTURE OF THREADS from organic thermosplastic materials.—G. H. Johnson. 31139.

MANUFACTURE OF NITROGENOUS CONDENSATION PRODUCTS.—G. H. Johnson. 31140.

MANUFACTURE OF BUTANOL.—G. H. Johnson. 31373.

MANUFACTURE OF PHARMACEUTICALLY ACTIVE SUBSTANCES.—G. H. Johnson. 31629.

MANUFACTURE, ETC., OF TETRAHYDROFURANES.—G. H. Johnson. 31630.

APPARATUS FOR THE INTRODUCTION OF FINELY GRAINED SUBSTANCES into chambers under gas pressure.—G. H. Johnson. 31631.

PROCESS FOR IMPROVING REGENERATED CELLULOSE.—G. H. Johnson. 31632.

COATING OF ANIMAL GLUE with a cellulose ester layer.—C. A. Lister. 31396.

CONVERSION OF BUTANES.—A. L. Mond (Universal Oil Products Co.). 31166.

CONVERSION OF HYDROCARBON OILS.—A. L. Mond. 31547.

MANUFACTURE OF ANHYDROUS ALUMINIUM SULPHATE.—Monsanto Chemical Co. (United States, Nov. 18, '36.) 31612.

TREATMENT OF GLASS FIBRES.—Naamlooze Vennootschap Maatschappij tot Beheer en Exploitatie van Octrooien. (Germany, Nov. 17, '36.) 31601.

INSECTICIDES.—W. C. O'Kane. (United States, Nov. 24, '36.) 31474; (United States, Jan. 5.) 31475.

MANUFACTURE OF BARBITURIC ACID COMPOUNDS.—H. E. Potts (Pola Fabrica di Prodotti Chimici Soc. Anon.). 31456.

ALKYLATED AROMATIC ETHER POLYSULPHONATE.—Röhm and Haas Co. (United States, Dec. 30, '36.) 31447.

MANUFACTURE OF LIQUID PREPARATIONS for medical, etc., use.—Soc. des Usines Chimiques Rhone-Poulenc. 31353.

PRODUCTION OF AROMATIC HYDROCARBONS with unsaturated side chains.—Soc. des Usines Chimiques Rhone-Poulenc, R. F. Chambret and M. L. A. Fluchaire. 31647.

MANUFACTURE OF COMPOUNDS containing amino or imino groups. Soc. of Chemical Industry in Basle. (Switzerland, Nov. 11, '36.) 30987; (Switzerland, Nov. 10.) 30988.

MANUFACTURE OF AZO-DYESTUFFS.—Soc. of Chemical Industry in Basle. (Switzerland, Nov. 16, '36.) 31480; (Switzerland, Nov. 15.) 31481; (Switzerland, Nov. 16, '36.) 31482; (Switzerland, Nov. 15.) 31483.

MANUFACTURE OF HALOGENATED ORGANIC COMPOUNDS.—Standard Oil Development Co. (United States, Nov. 21, '36.) 31437; (United States, Oct. 20.) 31438.

MANUFACTURE OF CRESYLIC AND CARBOLIC ACIDS.—J. L. Strevens and T. O. Wilton. 31287.

MANUFACTURE OF ALUMINIUM ALLOY.—H. L. Whitman. 31525.

RUBBER HYDROHALIDES.—Wingfoot Corporation. (United States, March 23.) 31448.

Specifications Open to Public Inspection

HYDRAULIC GYPSUM CEMENT MATERIAL, and process of manufacturing same.—Rumford Chemical Works. May 14, 1936. 9012/37.

PROCESS FOR THE MANUFACTURE OF SHAPED PRODUCTS, such as threads, sheets, films, and the like.—R. Koepp and Co. Chemische Fabrik, A.-G. May 11, 1936. 10233/37.

MANUFACTURE OF DIALKOXY SUBSTITUTED β-GLYCOLS.—Dr. A. Wacker Ges. Fur Elektro-Chemische Industrie Ges. May 9, 1936. 10618/37.

AROMATIC POLYETHER CHLORIDES.—Röhm and Haas Co. May 14, 1936. 12670/37.

METHODS FOR THE PRODUCTION OF PURE MAGNESIUM COMPOUNDS, more particularly magnesium oxide.—Ges.-Zur Vertwertung Chemisch-Technischer Verfahren Vaduz. (Cognate Applications, 12929/37 and 12930/37.) 12928/37.

PROCESS FOR THE MANUFACTURE OF POLYMETHINE DYESTUFFS.—I. G. Farbenindustrie. May 9, 1936. 13215/37.

MANUFACTURE OF DIAZO-COMPOUNDS of 2-amino-1-oxynaphthalene sulphonic acids containing nitrogroups.—Soc. of Chemical Industry in Basle. May 14, 1936. 13368/37.

MANUFACTURE OF 4-NITRO-2-AMINO-1-OXYNAPHTHALENE SULPHONIC ACIDS.—Soc. of Chemical Industry in Basle. May 14, 1936. 13369.

MANUFACTURE OF WATER-INSOLUBLE AZO-DYESTUFFS for the dyeing and printing of cellulose esters and ethers.—I. G. Farbenindustrie. May 15, 1936. 13695/37.

MANUFACTURE OF METALLIFEROUS AZO-DYESTUFFS.—Soc. of Chemical Industry in Basle. May 14, 1936. 13370/37.

PROCESS FOR THE MANUFACTURE OF ACID DYESTUFFS.—I. G. Farbenindustrie. May 12, 1936. 13448/37.

Specifications Accepted with Date of Application

COLLOIDISED VAT DYES.—Calco Chemical Co., Inc. April 18, 1935. 474,827.

TREATMENT OF ELECTRODEPOSITED ZINC COATINGS.—Imperial Chemical Industries. March 30, 1936. 474,977.

POLYMERISATION OF OLEFINES.—A. Carpmael (I. G. Farbenindustrie.) April 4, 1936. 474,831.

DERIVATIVES OF RUBBER and allied substances containing chlorine.—D. D. Pratt, and R. Handley. April 6, 1936. 474,979.

PLANT FOR THE CARBONISATION OF SOLID HYDROCARBONS, lime burning, and electrochemical or metallurgical processes. C. H. Verity. May 6, 1936. (Cognate Applications, 7912/37 and 12583/37.) 475,033.

MANUFACTURE AND PRODUCTION OF COMPOUNDS of the 1.9-anthrapyridone series.—G. W. Johnson (I. G. Farbenindustrie.) May 11, 1936. 475,158.

MANUFACTURE OF DYESTUFF INTERMEDIATES.—Yorkshire Dyeware and Chemical Co., Ltd., and J. G. Bedford. May 11, 1936. 475,160.

ELECTROLYTIC MANUFACTURE OF HYPOSULPHITES.—I. G. Farbenindustrie. May 10, 1935. 475,058, 475,059, 475,060.

PURIFYING CHLORINATED HYDROCARBONS.—I. G. Farbenindustrie. July 4, 1935. 475,109.

MANUFACTURE OF DERIVATIVES OF ALIPHATIC ACID AMIDES.—A. W. Baldwin, E. E. Walker, and Imperial Chemical Industries, Ltd. May 13, 1936. (Cognate Application, 13602/36.) 475,170.

MANUFACTURE OF DERIVATIVES of aliphatic alcohols.—A. W. Baldwin, H. A. Piggott, and Imperial Chemical Industries, Ltd. May 13, 1936. 475,119.

PRODUCTION OF SULPHURIC ACID.—Grasselli Chemical Co. May 24, 1935. 475,120.

CHLORINATING AND BROMINATING HYDROCARBONS.—W. W. Groves (I. G. Farbenindustrie.) May 14, 1936. 474,922.

ESTERS OF ACIDS of the acrylic series, and their applications. E. I. du Pont de Nemours and Co. May 16, 1935. 475,131.

MANUFACTURE OF SYNTHETIC RESINS.—E. I. du Pont de Nemours and Co. May 16, 1935. 475,132.

PROCESS OF OBTAINING A THIO-BARBITURIC ACID COMPOUND.—A. F. Burgess (Parke, Davis, and Co.). May 29, 1936. 474,842.

MANUFACTURE OF POLYMERIC AMIDES.—W. W. Triggs. Aug. 2, 1935. 474,999.

CONVERSION OF HYDROCARBON OILS.—A. L. Mond (Universal Oil Products Co.). Dec. 9, 1936. 475,010.

MANUFACTURE OF COLOURED FILAMENTS, yarns, films, and similar materials having a basis of organic derivatives of cellulose.—British Celanese, Ltd. March 3, 1936. 474,879.

MANUFACTURE AND PRODUCTION OF FORMIC ACID.—I. G. Farbenindustrie. March 25, 1936. 475,016.

MANUFACTURE OF β-PHENYL ETHYL ALCOHOL and homologues thereof.—W. W. Groves (I. G. Farbennidustrie.) May 7, 1936. (Divided out of 474,687.) 475,022.

Chemical and Allied Stocks and Shares

THERE has been a general decline in share values this week and many leading industrial shares show a fall of several shillings on balance. Sentiment in the market is so much under the influence of the fear of a major set-back in world trade conditions if commercial activity in the United States does not recover during the next few months, that the volume of business has declined to very small proportions. As a result only a relatively small amount of buying or selling of any particular share may cause a sharp rise or fall in price.

As was to be expected shares of chemical and allied companies reflected the general market trend. Imperial Chemical are 32s. 6d. at the time of writing, compared with 36s. 6d. a week ago, while Distillers have fallen sharply to 99s. 6d. at which quite an attractive yield would appear to be offered, bearing in mind that last year's 22½ per cent. dividend was covered by a large margin of profits. Turner and Newall have reacted from 83s. to 75s. 7½d., although it continues to be assumed in the market that the forthcoming results will show that the dividend is to be at least maintained at 17½ per cent. British Oxygen were also weak and have reacted from 88s. 9d. to 78s. 9d.—but it has to be remembered that conditions in the stock and share markets are not normal at the present time, and that the sharp declines in prices do not indicate fears that the next reports of leading companies will show reduced dividends.

Boots Pure Drug are 42s. 9d., compared with 46s. 6d. a week ago; Timothy Whites and Taylors are 27s. 9d., compared with 30s. Sangers are 22s., compared with 23s., and British Match at 35s. 9d. also show a decline of 1s. United Molasses were at the lower level of 23s., but showed considerable activity, awaiting the dividend announcement. Borax Consolidated have lost 1s. 6d. to 26s. 3d.

Associated Portland Cement are 82s. 6d., compared with 90s. a week ago. Most other cement shares were reactionary, having failed to benefit from attention drawn to the possibility that the Government's important road construction schemes may lead to increased demand for cement in 1938. British Plaster Board at 30s. 9d., were relatively steady as they offer a large yield, and the fact that the interim payment has been maintained at 20 per cent. has aroused hopes that a total of 50 per cent. may again be forthcoming for the year. Imperial Smelting are 12s. 9d., compared with 13s. 9d. Pinchin Johnson show a reaction from 40s. to 37s. 3d., at which they offer a favourable yield, bearing in mind the statement at the last meeting that there should be no difficulty in maintaining the dividend at 20 per cent. on the enlarged capital. Lewis Berger and most other paint shares were only moderately lower in price.

Unilever have gone back 1s. to 36s., although there are hopes of a satisfactory improvement in the total dividend. Fison Packard and Prentice, Cooper McDougall and Robertson and British Glues were around the same prices as those given a week ago, but the latter did not appear to be tested by much business. B. Laporte changed hands at the lower level of 92s. 6d.

Iron and steel shares have been particularly reactionary owing to the general trend and also to suggestions that the trade agreement to be negotiated with the United States might result in a reduction in the import duty on steel; although in responsible quarters this latter is considered to be very unlikely. Dorman Long have fallen to 32s. 6d. having remained under disappointment with the conservative dividend policy followed by the directors. International Nickel, leading oil shares and other securities with a market on both sides of the Atlantic were lowered sharply and have shown considerable fluctuations.

Weekly Prices of British Chemical Products

CONDITIONS throughout the chemical markets have not been quite so active during the past week. There has been no falling off, however, in the movement of heavy chemicals into consumption, the bulk of which represents contract deliveries, but the volume of inquiry for fresh spot business has been exceedingly moderate. In most sections of the market negotiations are proceeding for the renewal of forward contracts, and this class of business shows a definite increase in the aggregate over past years. The price of acetic acid has been raised by £2 per ton both for the 80 per cent. pure and technical grades. Chlorate of soda is also advanced on last week's quotation. There are no other important alterations to record for general chemicals, rubber chemicals and good distillation products values being on a firm basis throughout. In the coal tar section, trade is rather on the quiet side with buyers operating cautiously. Carbolic acid crystals remain unchanged with limited supplies available. A small business is being put through for cresylic acid, and quotations are inclined to be a little harder. Naphthalene is again weaker, and pitch is offered at lower levels. On the other hand pyridine remains a bright feature with values further advanced.

MANCHESTER.—This week's Stock Exchange slump, which, in some quarters, is taken to reflect a lack of confidence in the maintenance of active trading conditions, has tended to arouse a feeling of uncertainty on the Manchester chemical market, although in spite of this a little more interest in forward contract buying has been reported in several directions during the past week and the next two weeks should see the covering movement in full swing. In the meantime, so far as the general run of heavy chemicals are concerned, there is still a fairly satisfactory flow of delivery specifications against old contracts, and, apart from a seasonal contract here and there, traders see little indication of a recession in business at the consuming end. Prices generally continue on a steady basis.

GLASGOW.—Business in general chemicals for prompt delivery has been rather quieter during the week, both for home trade and export, but a fair amount of interest is being shown in contract bookings for 1938.

Price Changes

Rises: Acetic acid, tech., 80%, pure 80%, tech. 40%; citric acid (Manchester); sodium chromate; sodium chlorate; cresylic acid, 99/100%; pyridine, 90/140%, 90/160%.

Falls: Arsenic (Manchester); copper sulphate (Manchester); cadmium sulphide; vermilion; pitch; calcium acetate, brown and grey; methyl acetone; wood tar.

General Chemicals

ACETONE.—£45 to £47 per ton.

ACETIC ACID.—Tech, 80%, £30 5s per ton; pure 80%, £32 5s.; tech., 40%, £15 12s. 6d. to £18 12s. 6d.; tech., 60%, £23 10s. to £25 10s. MANCHESTER: 80%, commercial, £30 5s.; tech. glacial, £42 to £46.

ALUM.—Loose lump, £8 7s. 6d. per ton d/d; GLASGOW: Ground, £10 7s. 6d. per ton; lump, £9 17s. 6d.

ALUMINIUM SULPHATE.—£7 per ton d/d Lancs.; GLASGOW: £7 to £8 ex store.

AMMONIA, ANHYDROUS.—Spot, 1s. to 1s. 1d. per lb. d/d in cylinders. SCOTLAND: 10½d. to 1s. 0½d., containers extra and returnable.

AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb., d/d.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE.—Grey galvanising, £17 10s. per ton, ex wharf.

AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton carriage paid according to quantity. (See also Salammoniac.)

AMMONIUM DICHROMATE.—8d. per lb. d/d U.K.

ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Continental material £11 per ton c.i.f., U.K. ports; Cornish White, £12 5s. to £12 10s. per ton f.o.r., mines, according to quantity. MANCHESTER: White powdered Cornish, £16 10s. per ton, ex store.

BARIUM CHLORIDE.—£11 10s. to £12 10s. per ton in casks ex store. GLASGOW: £11 10s. per ton.

BLEACHING POWDER.—Spot, 35/37%, £8 15s. per ton in casks, special terms for contracts. SCOTLAND: £9 per ton net ex store.

BORAX COMMERCIAL.—Granulated, £16 per ton; crystal, £17; powdered, £17 10s.; extra finely powdered, £18 10s., packed in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Granulated, £16, crystal, £17; powdered, £17 10s. per ton in 1-cwt. bags, carriage paid.

BORIC ACID.—Commercial granulated, £28 10s. per ton; crystal, £29 10s.; powdered, £30 10s.; extra finely powdered, £32 10s. in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Crystals, £29 10s.; powdered, £30 10s. 1-cwt. bags in 1-ton lots.

CALCIUM BISULPHITE.—£6 10s. per ton f.o.r. London.

CHARCOAL, LUMP.—£6 to £6 10s. per ton, ex wharf. Granulated, £7 to £9 per ton according to grade and locality.

CHROMETAN.—Crystals, 2½d. per lb.; liquor, £19 10s. per ton d/d. station in Drums. GLASGOW: 70/75% solid, £5 15s. per ton net ex store.

CHROMIC ACID.—9¼d. per lb., less 2½%; d/d U.K.

CHROMIUM OXIDE.—11d. per lb.; d/d U.K.

CITRIC ACID.—1s. 0¼d. per lb. MANCHESTER: 1s. 0¼d. SCOTLAND: B.P. crystals, 1s. 0¼d. per lb.; less 5%, ex store.

COPPER SULPHATE.—£21 7s. 6d. per ton, less 2% in casks. MANCHESTER: £18 15s. per ton f.o.b. SCOTLAND: £20 10s. per ton, less 5%, Liverpool, in casks.

CREAM OF TARTAR.—100%, 92s. per cwt., less 2½%. GLASGOW: 99%, £4 12s. per cwt. in 5-cwt. casks.

FORMALDEHYDE.—£22 10s. per ton.

FORMIC ACID.—85%, in carboys, ton lots, £42 to £47 per ton.

GLYCERINE.—Chemically pure, double distilled, 1.260 s.g., in tins, £5 7s. 6d. to £6 7s. 6d. per cwt. according to quantity; in drums, £5 to £5 13s. 6d.

HYDROCHLORIC ACID.—Spot, 5s. to 7s. 6d. carboy d/d according to purity, strength and locality.

IODINE.—Resublimed B.P., 6s. 4d. per lb. in 7 lb. lots.

LACTIC ACID.—(Not less than ton lots) Dark, 50% by volume, £21 10s.; by weight, £27 10s.; Pale, 50% by volume, £27; by weight, £32 per ton. LANCASHIRE: Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One-ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £31 10s. ton lots; brown, £35. GLASGOW: White crystals, £32 10s.; brown, £1 per ton less. MANCHESTER: White, £35; brown, £34.

LEAD NITRATE.—£34 per ton for 1-ton lots.

LEAD, RED.—£32 15s. 0d., 10 cwt. to 1 ton, less 2½% carriage paid. SCOTLAND: £32 per ton, less 2% carriage paid for 2-ton lots.

LITHARGE.—SCOTLAND: Ground, £32 per ton, less 2½%, carriage paid for 2-ton lots.

MAGNESITE.—SCOTLAND: Ground calcined, £9 per ton, ex store.

MAGNESIUM CHLORIDE.—SCOTLAND: £7 10s. per ton.

MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY.—Ammoniated B.P. (white precip.), lump, 5s. 11d per lb.; powder B.P., 6s 1d.; bichloride B.P. (corros. sub.) 5s. 2d.; powder B.P. 4s. 10d.; chloride B.P. (calomel), 5s. 11d.; red oxide cryst. (red precip.), 7s.; levig. 6s. 6d.; yellow oxide B.P. 6s. 4d.; persulphate white B.P.C., 6s. 1d.; sulphide black (hyd. sulph. cum sulph. 50%), 6s. For quantities under 112 lb., 1d. extra.

METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d. more in all cases and the range of prices is according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 9d. to 2s. 4d.

NITRIC ACID.—80° Tw. spot, £16 10s. per ton makers' works.

OXALIC ACID.—£48 15s. to £57 10s. per ton, according to packages and position. GLASGOW: £2 9s. per cwt. in casks. MANCHESTER: £49 to £54 per ton ex store.

PARAFFIN WAX.—SCOTLAND: 3¾d. per lb.

POTASH CAUSTIC.—Solid, £35 5s. to £36 15s. per ton for 2-ton lots ex store; broken, £42 per ton. MANCHESTER: £39.

POTASSIUM CHLORATE.—£36 7s. 6d. per ton. GLASGOW: 4¼d. per lb. MANCHESTER: £38 per ton.

POTASSIUM DICHROMATE.—SCOTLAND: 5d. per lb., net, carriage paid.

POTASSIUM IODIDE.—B.P. 5s. 6d per lb. in 7 lb. lots.

POTASSIUM NITRATE.—Small granular crystals, £24 to £27 per ton ex store, according to quantity. GLASGOW: Refined granulated, £29 per ton c.i.f. U.K ports. Spot, £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 9¾d. per lb. SCOTLAND: B.P. Crystals, 9¾d. MANCHESTER: B.P. 10¾d. to 1s.

POTASSIUM PRUSSIATE.—6¼d. per lb. SCOTLAND: 7d. net, in casks, ex store. MANCHESTER: Yellow, 6¼d.

SALAMMONIAC.—Dog-tooth crystals, £36 per ton, fine white crystals, £16 10s. per ton, in casks, ex store. GLASGOW: Large crystals, in casks, £37 10s.

SALT CAKE.—Unground, spot, £3 to £3 10s. per ton.

SODA ASH.—58% spot, £5 17s. 6d. per ton f.o.r. in bags.

SODA, CAUSTIC.—Solid, 76/77° spot, £12 10s. per ton d/d station. SCOTLAND: Powdered 98/99%, £18 10s. in drums, £19 5s. in casks, Solid 76/77° £15 12s. 6d. in drums; 70/73%, £15 12s. 6d., carriage paid buyer's station, minimum 4-ton lots; contracts, 10s. per ton less.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.
SODIUM ACETATE.—£18 per ton carriage paid North. GLASGOW: £17 15s. per ton net ex store.
SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d station in bags. GLASGOW: £13 5s. per ton in 1 cwt. kegs, £11 5s. per ton in 2-cwt. bags. MANCHESTER: £10 10s.
SODIUM BISULPHITE POWDER.—60/62%, £20 per ton d/d 1 cwt. iron drums for home trade.
SODIUM CARBONATE MONOHYDRATE.—£15 5s. per ton d/d in minimum ton lots in 2 cwt. free bags
SODIUM CHLORATE.—£27 10s. to £32 per ton. GLASGOW: £1 11s. per cwt., minimum 3 cwt. lots.
SODIUM CHROMATE.—4¼d. per lb. d/d U.K.
SODIUM DICHROMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount 5%. MANCHESTER: 4d. per lb. GLASGOW: 4d., net, carriage paid.
SODIUM HYPOSULPHITE.—Pea crystals, £14 10s. per ton for 2-ton lots; commercial, £11 5s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.
SODIUM METASILICATE.—£14 5s. per ton, d/d U.K. in cwt. bags.
SODIUM NITRATE.—Refined, £8 per ton for 6-ton lots d/d.
SODIUM NITRITE.—£18 5s. per ton for ton lots.
SODIUM PERBORATE.—10%, 9¼d. per lb. d/d in 1-cwt. drums.
SODIUM PHOSPHATE.—Di-sodium, £12 per ton delivered for ton lots. Tri-sodium, £15 to £16 per ton delivered per ton lots.
SODIUM PRUSSIATE.—.d. per lb. for ton lots. GLASGOW: 5d. to 5¾d. ex store. MANCHESTER: 4d. to 4¾d.
SODIUM SILICATE.—£9 10s. per ton.
SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.
SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 12s. 6d.
SODIUM SULPHIDE.—Solid 60/62%, Spot, £11 5s. per ton d/d in drums; crystals 30/32%, £8 15s. per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.
SODIUM SULPHITE.—Pea crystals, spot, £13 10s. per ton d/d sta- of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb.
SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.
TARTARIC ACID.—1s. 1¼d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb. GLASGOW: 1s. 1d. per lb.
WHITE SUGAR OF LEAD.—£31 10s. per ton net.
ZINC SULPHATE.—Tech., £12 10s. f.o.r., in 2 cwt. bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 7d. to 1s. 2d. per lb., according to quality. Crimson, 1s. 6d. to 1s. 7½d. per lb.
ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £6 10s. per ton, according to quality.
CADMIUM SULPHIDE.—7s. 6d. to 7s. 9d. per lb.
CARBON BLACK.—4¾d. per lb., ex store.
CARBON DISULPHIDE.—£31 to £33 per ton, according to quantity, drums extra.
CARBON TETRACHLORIDE.—£41 to £46 per ton, according to quantity, drums extra.
CHROMIUM OXIDE.—Green, 1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 2d. per lb.
INDIA-RUBBER SUBSTITUTES.—White, 4¾d. to 5½d. per lb.; dark 4d. to 4½d. per lb.
LAMP BLACK.—£28 to £30 per ton del., according to quantity. Vegetable black, £35 per ton upwards.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE.—30%, £16 10s. to £17 5s. per ton.
SULPHUR.—£9 to £9 5s. per ton. SULPHUR PRECIP. B.P., £55 to £60 per ton. SULPHUR PRECIP. COMM., £50 to £55 per ton.
SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quantity.
VERMILION.—Pale, or deep, 5s. per lb., 1-cwt. lots.
ZINC SULPHIDE.—£58 to £60 per ton in casks ex store, smaller quantities up to 1s. per lb.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6% nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1938: November, £7 8s.; December, £7 9s. 6d.; January, 1938, £7 11s.; February, £7 12s. 6d.; March/June, £7 14s.
CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1938: November, £7 10s.; December, £7 11s. 3d.; January, 1938, £7 12s. 6d.; February, £7 13s. 9d.; March, £7 15s.; April/June, £7 16s. 3d.
NITRO CHALK.—£7 10s. 6d. per ton up to June 30, 1938.
SODIUM NITRATE.—£8 per ton for delivery up to June 30, 1938.
CONCENTRATED COMPLETE FERTILISERS.—£11 4s. to £11 13s. per ton in 6-ton lots to farmer's nearest station.
AMMONIUM PHOSPHATE FERTILISERS.—£10 19s. 6d. to £14 16s. 6d. per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

BENZOL.—At works, crude, 9½d. to 10d. per gal.; standard motor, 1s. 3d. to 1s. 3½d.; 90%, 1s. 4d. to 1s. 4½d.; pure, 1s. 8d. to 1s. 8¾d. GLASGOW: Crude, 10d. to 10½d. per gal.; motor, 1s. 4d. to 1s. 4½d.
CARBOLIC ACID.—Crystals, 7¾d. to 8½d. per lb., small quantities would be dearer; Crude, 60's, 4s. to 4s. 3d., dehydrated, 4s. 6d. to 4s. 9d. per gal. MANCHESTER: Crystals, 9¾d. per lb. f.o.b. in drums; crude, 4s. 3d. per gal. GLASGOW: Crude, 60's, 4s. 3d. to 4s. 6d. per gal.; distilled, 60's.
CREOSOTE.—Home trade, 6½d. to 6¾d. per gal., f.o.r. makers' works; exports, 6⅝d. to 6¾d. per gal., according to grade. MANCHESTER: 5½d. to 6½d. GLASGOW: B.S.I. Specification, 6d. to 6½d. per gal.; washed oil, 5d. to 5½d.; lower sp. gr. oils, 5¾d. to 6½d.
CRESYLIC ACID.—97/99%, 4s. 1d. to 4s. 3d.; 99/100%, 4s. 9d. to 5s. per gal., according to specification; Pale, 99/100%, 4s. 6d.; Dark, 95%, 3s. 9d. to 4s. per gal. GLASGOW: Pale, 99/100%, 5s. to 5s. 6d. per gal.; pale, 97/99%, 4s. 6d. to 4s. 10d., dark, 97/99%, 4s. 3d. to 4s. 6d.; high boiling acids, 2s. to 2s. 6d. American specification, 4s. 3d. to 4s. 6d. MANCHESTER: Pale, 99/100%, 4s. 5d.
NAPHTHA.—Solvent, 90/160, 1s. 6½d. to 1s. 7½d. per gal.; solvent, 95/160%, 1s. 7d. to 1s. 8d., naked at works; heavy 90/190%, 1s. 1½d. to 1s. 3d. per gal., naked at works, according to quantity. GLASGOW: Crude, 6½d. to 7½d. per gal.; 90%, 160, 1s. 5d. to 1s. 6d., 90%, 190, 1s. 1d. to 1s. 3d.
NAPHTHALENE.—Crude, whizzed or hot pressed, £8 to £9 per ton; purified crystals, £18 per ton in 2-cwt. bags. LONDON: Fire lighter quality, £5 10s. to £7 per ton. GLASGOW: Fire lighter, crude, £6 to £7 per ton (bags free). MANCHESTER: Refined, £19 per ton f.o.b.
PITCH.—Medium, soft, 36s. to 38s. per ton, f.o.b. MANCHESTER: 36s. 6d. f.o.b., East Coast. GLASGOW: f.o.b. Glasgow, 35s. to 37s. per ton; in bulk for home trade, 35s.
PYRIDINE.—90/140%, 13s. to 15s. per gal.; 90/160%, 12s. to 13s. per gal.; 90/180%, 3s. to 4s. per gal. f.o.b. GLASGOW: 90% 140, 10s. to 12s. per gal.; 90% 160, 9s. to 10s.; 90% 180, 2s. 6d. to 3s. MANCHESTER: 12s. 6d. to 14s. per gal.
TOLUOL.—90%, 1s. 11d. per gal.; pure, 2s. 4d. to 2s. 5d. GLASGOW: 90%, 120, 1s. 10d. to 2s. 1d. per gal.
XYLOL.—Commercial, 2s. 3d. per gal.; pure, 2s. 5d. GLASGOW: Commercial, 2s. to 2s. 1d. per gal.

Wood Distillation Products

CALCIUM ACETATE.—Brown, £7 15s. to £8 5s. per ton; grey, £10 to £11. Liquor, brown, 30° Tw., 6d. to 8d. per gal. MANCHESTER: Brown, £9 10s.; grey, £11 10s.
METHYL ACETONE.—40-50%, £40 to £42 per ton.
WOOD CREOSOTE.—Unrefined 6d. to 9d. per gal., according to boiling range.
WOOD NAPHTHA, MISCIBLE.—2s. 8d. to 3s. 3d. per gal.; solvent, 3s. 6d. to 3s. 9d. per gal.
WOOD TAR.—£2 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZIDINE, HCl.—2s. 5d. per lb., 100% as base, in casks.
BENZOIC ACID, 1914 B.P. (ex toluol).—1s. 9½d. per lb. d/d buyer's works.
m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-CRESOL 30/31° C.—6½d to 7½d. per lb. in 1-ton lots.
p-CRESOL, 34-5° C.—1s. 7d. to 1s. 8d. per lb. in ton lots.
DICHLORANILINE.—1s. 11½d. to 2s. 3d. per lb.
DIMETHYLANILINE.—Spot, 1s. 6d. per lb., package extra.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE, SOLID.—£72 per ton.
DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C., 10d.
DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works
GAMMA ACID.—Spot, 4s. per lb. 100% d/d buyer's works.
H ACID.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.
NAPHTHIONIC ACID.—1s. 8d. per lb
α-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.
β-NAPHTHOL.—9½d. to 9¾d. per lb.; flake, 9½d. to 9¾d.
α-NAPHTHYLAMINE.—Lumps, 1s. per lb.; ground, 1s. 0½d. in casks.
β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb., d/d buyer's works.
NEVILLE AND WINTHER'S ACID.—Spot, 3s. per lb. 100%.
o-NITRANILINE.—3s. 11d. per lb.
m-NITRANILINE.—Spot, 2s. 7d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 8d. to 2s. 1d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 4½d. to 5d. per lb., in 90-gal. drums, drums extra. 1-ton lots d/d buyer's works.
NITRONAPHTHALENE.—9½d. to 10d. per lb.; P.G., 1s. 0½d. per lb.
SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb., 100% d/d buyer's works.
SULPHANILIC ACID.—Spot, 8d. per lb. 100%, d/d buyer's works.
o-TOLUIDINE.—10½d. per lb., in 8/10-cwt. drums, drums extra.
p-TOLUIDINE.—1s. 10½d. per lb., in casks.
m-XYLIDINE ACETATE.—4s. 3d. per lb., 100%.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Bankruptcy Proceedings

VICTOR DUPLOYEN, Killingworth House, Killingworth, Northumberland, antiseptic manufacturer, lately carrying on business at Imperial Buildings, Westgate Road, Newcastle-upon-Tyne.—The application for discharge was heard at the Court House, Westgate Road, Newcastle-upon-Tyne. It was reported that at the date of adjudication, debtor's assets were worth only £1 7s. 8d. It appeared that he had been involved in an action in the Chancery Division in 1936, and entered into that litigation knowing full well that he had no means of paying for his defence. The Judge said that conduct was to be criticised, debtor having known that if he lost the action he had nothing with which to pay either side's costs. The principal creditors, who had brought the action against debtor, opposed the application for his discharge on statutory grounds. The Judge decided to grant the discharge, subject to three months' suspension.

TAYLOR, HAROLD CHADWICK, "South View," St. Ann's Road, Prestwich, Manchester. (A.F.D., 27/11/37.) Analytical Chemist, and carrying on business at The Laboratories, Bury New Road, Prestwich, Salford. Nature of Order made—That the bankrupt's discharge be suspended for 15 months, and that he be discharged as from January 25, 1939. Grounds named in Order for refusing an absolute Order of Discharge—Proofs of Facts mentioned in Section 26, sub-section 3 (A., B., C. and K.), Bankruptcy Act, 1914, as amended by Section 1 of the Bankruptcy (Amendment) Act, 1926.

Mortgages and Charges

(NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after it creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

MIRALITE, LTD., London, E.C., manufacturers of aluminium alloy, etc. (M., 27/11/37.) November 10, £1,500 debentures; general charge (subject to a mortgage). *£192. Dec. 3, 1936.

CONDY AND MITCHELL, LTD., London, E.C., manufacturers of disinfectants, etc. November 15, £500 debenture, to H. J. B., E. and C. H. B. Condy, Putney; general charge. *Nil. January 14, 1927.

Satisfaction

THOMAS MERRY AND CO., LTD. (formerly E. Shufflebotham and Co., Ltd.), Birmingham, oil refiners, etc. (M.S., 27/11/37.) Satisfaction, November 15, of second mortgage registered May 13, 1933.

Forthcoming Events

Hull.

November 29.—Hull Chemical and Engineering Society, at the Lecture Room, Municipal Technical College, Park Street, at 7.45 p.m. F. A. Williams, "Hydrogenation, with special reference to the Products Obtainable."

December 3.—Hull Chemical and Engineering Society, at Powoluy's, King Edward Street, at 7.45 p.m. Annual dinner and dance.

Birmingham.

November 29.—Birmingham University Chemical Society, in the Chemical Lecture Theatre of the University, Edgbaston, at 5 p.m. Dr. G. S. Hanes, "The Action of Amylases in Relation to the Problem of the Molecular Constitution of Starch."

November 30.—Institute of the Plastics Industry (Midlands Section), at the James Watt Memorial Institute, Great Charles Street, at 8 p.m. E. Marsden, "Plastics in Telephone Engineering."

December 7.—Electrodepositors' Technical Society, at the James Watt Memorial Institute, Great Charles Street, at 7.30 p.m. T. A. Edwards, "Safety and Prevention of Accidents."

London.

November 30.—Institution of Chemical Engineers, in the Rooms of the Geological Society, Burlington House, Piccadilly, W.1, at 6 p.m. Professor H. Freundlich, "Industrial Applications of Supersonic Vibrations."

December 1.—Society of Public Analysts and Other Analytical Chemists at Burlington House, Piccadilly, W.1, at 8 p.m. Ordinary Meeting.

Institute of the Plastics Industry, at British Industries House, Marble Arch, W.1, at 8 p.m. N. H. Buckley, "Trade Marks."

December 2.—Chemical Society, at Burlington House, Piccadilly, W.1, at 8 p.m. Discussion on "The Influence of Structure on the Action of Parasiticidal Drugs," opened by Dr. T. A. Henry. Ordinary Scientific Meeting.

University of London, King's College, Strand, W.C.2, at 5.30 p.m. Professor J. Chadwick, "The Artificial Transmutation of Metal."

December 3.—Royal Institution, at 21 Albemarle Street, W.1, at 9 p.m. Irvine Masson, "Iodine."

December 6.—Society of Chemical Industry (London Section), at Burlington House, Piccadilly, W.1, at 8 p.m. Dr. E. Lester Smith, "Saponification in Colloidal Systems."

December 7.—British Association of Refrigeration, at the Institute of Marine Engineers, 85 Minories, E.C.3, at 6.30 p.m. "Small Air-Conditioning Units."

December 8.—British Association of Chemists, at Constitutional Club, India Buildings, Water Street, at 7.30 p.m. Section meeting.

Glasgow.

December 3.—The Ramsay Chemical Dinner, at Central Station Hotel.

Liverpool.

December 3.—Society of Chemical Industry, at the Department of Chemistry of the University, at 6 p.m. G. W. Daniels, "Refrigeration in Chemical Engineering." Joint meeting with Chemical Engineering Group of the Society.

Cardiff.

December 3.—Institute of Chemistry (Cardiff and District Section), H. W. Cremer, "The Choice of Construction Metals in Chemical Plant."

Newcastle.

December 3.—Chemical Society, at the University Union, College Road, at 7.15 p.m. Dinner-dance, jointly with the local sections of the Institute of Chemistry and Society of Chemical Industry.

Leeds.

December 6.—Society of Chemical Industry (Yorkshire Section), T. H. Blakeley, "The Classification of Tars and Oils according to their Physical Properties." Joint meeting of Yorkshire Section and Road and Building Materials Group.

Company News

Weardale Lead Co, in their report for the year ended September 30 shows profit, including income from investments, £15,813 (£7,389.)

A. B. Fleming & Co., manufacturers of printing ink, etc., announce an interim of 5 per cent. (same), payable November 23 for year ending April 30, 1938.

Anglo-French Phosphate in their report for the year ended December 31, 1936, shows profit of £20,395 (£22,614); add balance brought in £14,287, making £34,682; dividend of 8 per cent., less tax (same), and bonus 2½ per cent., less tax (same); forward, £14,994. Meeting, Norwich House, November 30.

Associated British Maltsters, Ltd., earned an income of £157,868 in the year to August 31 last. This is an increase of £5,420 on the previous year's total of £152,448. After providing £1,250 for stamp duty on the increased capital, net earnings are up from £99,990 to £116,394. The dividend is 10 per cent., less tax. A year ago the dividend was 10 per cent., accompanied by a bonus of 5 per cent. The transfer to reserve is increased by £25,000, to £40,000, which leaves the carry-forward slightly higher at £27,760.

Frederick Braby and Co., structural engineers, tank makers, etc., report profits of £169,019 for 15 months to September 30, after reserving £26,000 for N.D.C. and income-tax and writing off premium on redemption of debentures and expenses of new issues, totalling £2,022. For the previous 12 months profits were £69,913. Final dividend on old ordinary capital of 7½ per cent. makes 12½ per cent. for 15 months, against 8 per cent. for preceding year, new ordinary receiving final of 2½ per cent., making total of 4⅓ per cent.

Chemical Trade Inquiries

The following trade inquiries are abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

Egypt.—The Commercial Counsellor to H.M. Embassy in Egypt reports that the Egyptian Ministry of Public Works, Main Drainage Department, is calling for tenders (Contract No. 319) for the supply and erection at Amiria Main Drainage Pumping Station of a complete water cooling and filtering plant, together with electric lighting, aerial transmission line, and necessary housing for the machinery. The equipment includes water tower, water tanks and sump, pumping sets, pressure filters, coagulating and chlorinating apparatus, piping, spare parts, etc. Tenders, endorsed "Tender for Contract No. 319—Cairo Drainage, Fresh Water Supply for Amiria Sewage Pumping Station," should be addressed to the Director-General, Main Drainage Department, No. 4 Sharia el Antikhana, Cairo, Egypt, by whom they will be received up to noon on December 28, 1937. (Ref. T. 28551/37.)